

*Universal Precautions Guidelines*

*for*

*Primary Health Care Centers*

*In*

*Indonesia*

## **PREFACE**

The history of infection control begins in 1847 when it was discovered that infections could actually originate from medical practices. Ignac F. Semmelweis, a professor at the University of Vienna, observed that annually 600-800 mothers were dying of childbed fever in one ward of the Vienna General Hospital, while in another ward the average number of deaths was 60. Through careful investigation, Dr. Semmelweis discovered that the source of infection originated from the hands of the practitioners who delivered babies in ward one. These doctors performed autopsies and carried the infection from the cadavers directly to their patients because they did not wash their hands in between. In ward two, midwives and students delivered babies. When staff were instructed to wash their hands in a chlorine solution in between patients, the rate of death was reduced to 11.4% in ward one and 2.7% in ward two. In 1889, gloves were first introduced as a procedure for medical practitioners first to protect the professional's hands and later as a way to reduce the spread of infection to patients.

Nosocomial infections, or infections originating from medical practices, continue to plague patients and staff. The introduction of the HIV virus and the spread of diseases such as Hepatitis B and C have re-emphasized the need to develop and practice procedures that protect all from infections. This handbook is an attempt to assist our Indonesian health workers to minimize the risk of infection to their patients, communities and themselves.

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Universal Precautions and Training Project  
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## **GLOSSARY<sup>1</sup>**

**Antiseptic:** A chemical agent used on skin and mucus membranes to remove microorganisms without causing damage or irritation. *Not* to be used on objects such as instruments and table surfaces.

**Aseptic technique:** Practices that help reduce the risk of infection in patients during procedures, by reducing the possibility that microorganisms will enter the body. Aseptic technique refers to practices performed just before or during a procedure: handwashing, using gloves and other barriers, properly preparing a patient for a procedure by washing or applying the proper antiseptic, and maintaining a sterile field.

**Cleaning:** The second step in processing instruments and other items for reuse. This entails scrubbing instruments with a brush, detergent and water before they are sterilized or high level disinfected. This step removes blood, body fluids, organic material, tissue and dirt and ensures the effectiveness of sterilization or HLD.

**Decontamination:** This is the first step in processing instruments and other items for reuse. Decontamination kills viruses such as Hepatitis B and HIV and many other microorganisms, making instruments and other items safer to handle by staff who clean them. In addition, decontamination prevents blood, other body fluids, and tissue from drying on items and making them harder to clean. **Decontamination is performed by soaking instruments and other items in a 0.5% chlorine solution for 10 minutes immediately after use.**

**Disinfectant:** A chemical agent used to kill microorganisms on inanimate objects such as instruments and surfaces. Disinfectants are not meant to be used on the skin or mucous membranes of the body.

**General waste:** Waste that poses no risk of injury or infections. Similar in nature to household trash, general waste includes uncontaminated paper, boxes, packaging materials, bottles, plastic containers, and food-related trash.

### **High-level**

**Disinfection (HLD):** The third step in processing instruments and other items for reuse; this eliminates all microorganisms but does not reliably kill all bacterial endospores which cause diseases such as gangrene or tetanus. HLD is suitable for instruments that will come in contact with broken skin or intact mucous membranes. HLD can be performed by boiling or through use of chemicals such as chlorine solution.

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<sup>1</sup> Adapted from AVSC Infection Prevention Trainer's Manual

<b>Housekeeping</b>	The general cleaning and maintenance of a health care facility. This makes the workplace more appealing and reduces risk of infection.
<b>Medical waste</b>	Material generated in the diagnosis, treatment, or immunization of patients including: <ul style="list-style-type: none"><li>• Blood, blood products and other body fluids, and materials containing blood or body fluids such as bandages and surgical sponges.</li><li>• Organic waste such as human tissue, placentas, body parts.</li><li>• Sharps including all hypodermic and scalpel needles, blood tubes, other glass items.</li></ul>
<b>Microorganisms:</b>	Organisms that can be seen only with the magnification of a microscope. They exist everywhere in the environment—in people, animals, plants, soil, air and water, and other solutions.
<b>Nosocomial Infection:</b>	Infection originating in a hospital
<b>Pathogens:</b>	Microorganisms that are associated with disease.
<b>Sharps-disposal container:</b>	A puncture-resistant container for disposal of used needles and other sharp objects. A sharps-disposal container may be made out of a heavy cardboard box, an empty plastic jug, or a metal container.
<b>Sterilization:</b>	The third step in processing instruments and other items for reuse, this process eliminates all microorganisms including bacterial endospores. Sterilization is recommended for instruments and other items that will come in contact with the blood-stream or tissues under the skin. The three methods of sterilization are, autoclaving (steam sterilization), dry-heat sterilization (electric oven), and chemical sterilization (soaking in a chemical solution then rinsing in sterile water).
<b>Universal precautions:</b>	A set of recommendations designed to help minimize the risk of exposure to infectious materials such as blood and other body fluids, by both patients and staff, recognizing that anyone can be infected.

## CHAPTER I

### **The Importance of Universal Precautions**

*This chapter describes the reasons for practicing Universal Precautions.*

The need for a set of health facility guidelines to protect patients and health workers from blood borne infections became clear when HIV/AIDS was revealed to be transmitted through blood and body fluids, similar to the Hepatitis virus. Health facility staff are vulnerable to these infections as they experience needle stick injuries and skin contamination from infected blood. Patients are vulnerable because they can be exposed to contaminated equipment and blood products. The Centers for Disease Control in the United States published a manual detailing the procedures or universal precautions to follow to prevent the spread of infection in hospital settings. The manual offered a more advanced understanding of aseptic/antiseptic principles and emphasized that the practice of Universal Precautions (UP) would protect health workers and their patients. UP guidelines are based on the premise that all blood and body fluids are potentially infectious, regardless of whether they are from a patient or from a health care worker.

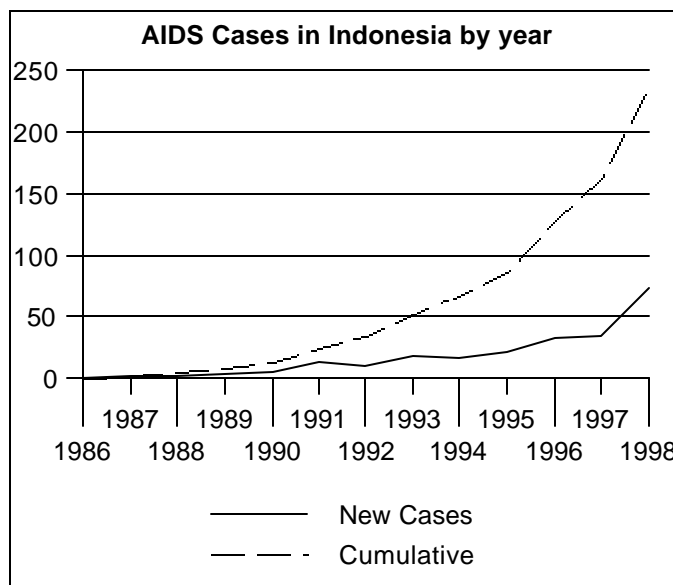
HIV/AIDS is a growing worldwide threat; the danger of HIV transmission increases because there is no visible sign that an individual is infected. During the last century, 33,600,000 people were infected with HIV and over 16 million men, women, children died. The number of cumulative infections in Africa was 23.3 million, in Asia it was 6 million, while in North America only 920,000 cases were identified. Everyday day 1000 children younger than 15 and 14,000 people between the ages of 15-49 are infected with HIV. Of these infections, 40 percent occur in women and 50 percent in those between 15-24 years of age. Ninety-five percent of all new infections occur in developing countries which have the fewest resources to respond to the epidemic.

While the prevalence of HIV/AIDS in Indonesia is still low, the risk of contracting the virus is high. In fact, the ministry of health states that the country is dangerously threatened by HIV/AIDS because many of the co-factors, such as poverty, unemployment, drug use, and refugees that have increased the rate of infection in other countries are present. The following factors increase Indonesia's vulnerability:

- 1) HIV/AIDS is endemic in some of Indonesia's neighbors such as Thailand.
- 2) Many tourists and other transients visit Indonesia.
- 3) There is a well-developed commercial sex industry.
- 4) The financial crisis resulted in unemployment and poverty which brought about riots, displaced people, and an internal refugee crisis.
- 5) A rise in the misuse of narcotics and psychotropic agents has accelerated the eruption of HIV.
- 6) Condom use is low in high-risk groups.

- 7) Universal precautions are not rigorously practiced.
- 8) Instruments for tattooing, body piercing and drug use are shared.

As of December 1999, the number of reported HIV/AIDS cases in Indonesia topped 1000, but UNAIDS calculates the number as closer to 50,000. More importantly the epidemic is on the rise. The KPAD Epidemiology Provincial East Java (Provincial/Regional Commission on AIDS Control) charted the rise of HIV/AIDS in 1999 as four times that of previous years.



*Source: CDC and Ministry 31 December 1998  
External HIV/AIDS Assessment Indonesia,  
November 1999*

Hepatitis B and C are spread more easily than HIV. The prevalence of Hepatitis B in Indonesia among blood donors was 2.08%<sup>2</sup> in 1998, while Hepatitis C was estimated at 2.10%<sup>3</sup> nationwide. As a comparison, in countries in the Middle East where many Indonesians are employed, the statistics show a much bigger problem. In Saudi Arabia, the prevalence of Hepatitis B in blood donors in Saudi Arabia (Riyadh) was recorded as high as 10%.

In countries like Indonesia, primary health care clinics, not hospitals, are generally the most critical health service delivery points. All staff at health centers can transmit infection to clients or become infected because of poor compliance with universal precautions. Complying with universal precautions is essential to minimize the risk to clients and clinic staff and to ensure that infection is not spread to the community through clinic services. If universal precautions are not followed, the health worker can easily pass infection from one patient to

<sup>2</sup> Source: Indonesian Red Cross Society Statistics

<sup>3</sup> Source: WHO

the next without contracting the disease himself. Each new infection increases the health worker's own risk.

A recent study (Bachroen 2000) of infection prevention at a primary health care clinic revealed the following practices, which increase the chances for accidental transmission to health workers, their clients and the greater community:

- Inadequate hand washing
  - Inappropriate glove use
  - Inappropriately recapped needles
  - Inadequate disposal of Sharps
  - Inadequate adherence to techniques for decontamination
  - Inadequate adherence to housekeeping norms
- Insufficient supplies to carry out UP

To the general public, health facilities represent care. Clients put their faith in the ability of the facility and its trained staff to improve the well being of themselves and their families. It is the obligation of health professionals to ensure that this faith is not misplaced. The practice of Universal Precautions is a major step in preventing the source of healing from becoming a source of infection.

The purpose of this manual is twofold. First, it is a guide to improve health worker's understanding of and skill in complying with safe infection prevention practices, minimizing the risk of transmission to themselves and their patients. Secondly, it is meant to increase the knowledge of officials in local government health services so that they can plan, teach, and evaluate the use of Universal Precautions in their respective programs.



## CHAPTER II

### DISEASE TRANSMISSION AT HEALTH CARE SITES

*This chapter outlines the cycle of infection transmission.*

Unless proper precautions are taken, health care facilities may be a source of infection as well as a source of cure. Diseases acquired in health care centers are those that patients or health care workers get as a result of exposure at the health care site. Symptoms may appear either during or after treatment. Health care workers must make every effort to prevent disease transmission at health care sites in order to protect patients, themselves, ancillary staff, and the community.

#### THE DISEASE TRANSMISSION CYCLE

Infections are transferred from one person to another through disease-transmitting microorganisms, known as pathogens. There are six steps in disease transmission: the infectious agent, the reservoir, the place of exit, the mode of transmission, the place of entry, and the susceptible host.

- ◆ **Infectious agents** are the microorganisms, such as bacteria, viruses, fungi, or parasites that can cause infection or disease.
- ◆ **The reservoir** is the place where the agent (microorganism) lives. Reservoirs can be people, animals, plants, soil, air, water, instruments and other items used in clinical procedures.
- ◆ **The place of exit** is the route by which the infectious agent leaves the reservoir. The bloodstream, broken skin (e.g. puncture, cut, surgical site, or rash), mucous membranes (e.g. eyes, nose, mouth), the respiratory tract (e.g. lungs), genitourinary tract (e.g. vagina, penis), gastrointestinal tract (e.g. mouth, anus), or placenta can be exit routes.
- ◆ **The mode of transmission** is the way in which the infectious agent moves from the reservoir to a susceptible host. Infectious agents can be transmitted by contact, through a vehicle, via a vector, or in the air.

Contact: The agent can be transmitted by touch (e.g. staphylococcus), by sexual intercourse (e.g. gonorrhea, HIV), or in airborne droplets (e.g. influenza, tuberculosis).

**Vehicle:** The infectious agent can be transmitted by such vehicles as food (e.g. salmonella), blood (e.g. Hepatitis B, HIV), water (e.g. cholera, shigella), or contaminated instruments (e.g., Hepatitis B, HIV).

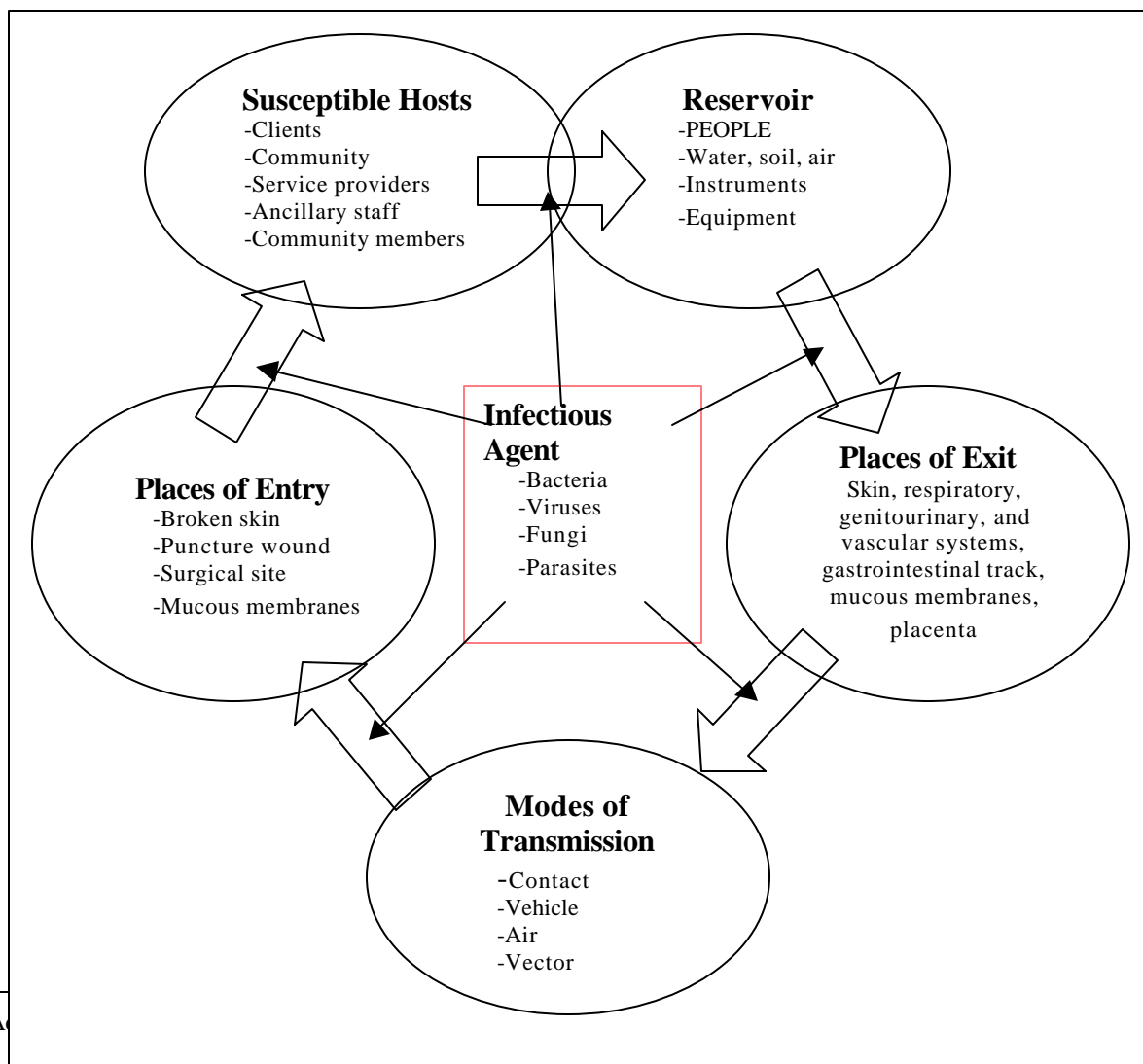
**Vector:** The agent can be transmitted to a person by insects and other invertebrate animals (e.g. mosquitoes spread malaria and dengue fever; fleas spread plague).

**Airborne:** The agent can be carried by air currents (e.g. measles, tuberculosis).

- ◆ **The place of entry** is the route by which the infectious agent moves into the susceptible host. It can enter the host through the same places it can exit.

A **susceptible host** is a person who can become infected by an infectious agent. For the purpose of this guide, susceptible hosts include clients, service providers, ancillary staff, and members of the community.

**Table 2.1<sup>4</sup>**  
**The Disease Transmission Cycle**



<sup>4</sup> A



## **DISEASE TRANSMISSION**

Among the most serious diseases spread at health care sites through body fluids are HIV, Hepatitis B, and Hepatitis C. Some scientific studies show that blood is the most significant body fluid in transmitting this kind of disease. Other infectious fluids are semen, vaginal fluids, abdominal fluids, fluids secreted to lubricate joints, amniotic fluids, and mothers' milk. The risk of contracting HIV through skin penetration and mucous membranes is low (.4% and .05% respectively). The risk of getting Hepatitis through skin penetration is high (9-30%) for Hepatitis B and medium for Hepatitis C (3-10%).

There are three patterns of disease transmission at health care facilities: from patient to patient, from patient to health care worker, and from health care worker to patient.

Patient to patient transmission is indirect and occurs for two principal reasons:

- ◆ Health care workers do not wash their hands before and after contact with clients, so they carry infections from one client to another.
- ◆ Health care workers use improperly cleaned or contaminated sharps or instruments (needles, suturing needles, scalpels).

Disease transmission from patients to health care workers is caused by contact with the infected patient's blood or body fluid. There are three ways in which this most often happens.

- ◆ Health care workers are injured by needles or other sharp instruments used on patients before the instruments are cleaned. Hepatitis B/C and HIV can be contracted in this way.
- ◆ A patient's blood or other body fluid can splash into the mucous membranes (eyes, nose, mouth) of a health care worker.
- ◆ Broken skin (cuts, rashes, fungi) on the health worker comes into contact with a patient's blood or body fluids.

Health care workers who become infected can in turn transmit diseases to their families and community unless the following precautions are strictly observed.

- Health care workers must wash their hands before leaving the facility so they don't contaminate family members or household items.
- Medical waste and sharps must be disposed of properly to protect the community.
- Health care workers must not wear contaminated clothing home from the facility.

Disease transmission via blood or body fluids from health care workers to patients is rare, but the possibility should not be ignored. If infected workers continue to perform their regular activities, they can infect others at the site. Halting the disease transmission cycle at the mode of transmission is the easiest, most effective way to prevent the spread of diseases at the health care centers.

## CHAPTER III

### THE ESSENTIAL ELEMENTS OF UNIVERSAL PRECAUTIONS

*This chapter describes the 5 major ways to minimize the risk of transmission.*

Universal precaution guidelines are based on the assumption that all blood and other body fluids are potentially infectious, whether from a health care worker or patient. The key to preventing infection in health care settings is following the principles of maintaining good hygiene, cleanliness and sterility by complying with five standard practices:

- ◆ Wash hands to avoid cross infection
- ◆ Use protective barriers to avoid direct contact with blood/fluids
- ◆ Handle sharps appropriately to minimise injury
- ◆ Decontaminate, clean and disinfect instruments properly
- ◆ Maintain sanitary premises and dispose of waste safely

#### Hand Washing

Hand washing is considered the simplest and most important action to prevent infection transmission. Microbes on human skin can be classified into two groups: resident flora and transient/contaminated flora. Resident flora are not easy to eliminate by scrubbing since they are adapted to living on human hands. Transient /contaminated flora, on the other hand, are easy to eliminate by scrubbing with soap or detergent. This kind of microbe can be frequently found on the skin of health care workers.

To prevent infection from spreading from health worker to patient or bringing infection home, hand washing should be conducted:

**Table 3.1**  
**Handwashing Indications**

Before	After
Starting Work	Examining a Patient
Examining a Patient	Handling Instruments or Potentially Contaminated Items or Body Secretions/Excretions
Administering an Injection	Removing gloves
Handling Disinfected Instruments	Using the toilet or latrine
Putting on Gloves	Sneezing or Coughing
Going Home	

There are several types of hand washing appropriate for different activities: routine; antiseptic and surgical; and alcohol handrub. *For most primary health care activities, routine handwashing conducted will be sufficient. (Handwashing steps are illustrated in Annex 2.)*

### ➤ USING PROTECTIVE BARRIERS

Barriers are used to break the disease transmission cycle by putting a *block* between the microorganism and the susceptible host, be it a client or staff member. Barriers are as important to health workers as they are to housekeeping staff to prevent infection transmission. Common barriers are gloves, aprons, masks, eye protectors, caps, and sturdy footwear.

The sort of protection a worker wears will depend on the activity the worker plans to do and the equipment used. For minor surgery (vasectomy, inserting or removing an implant), sterile or high-level disinfected gloves are sufficient, while complete body protection would be needed during operations.

**Table 3.2**  
**Rationale for Barrier Use**

<b>Barrier</b>	<b>Protects Patients</b>	<b>Protects Health Care Workers</b>	<b>Precautions</b>
Gloves	Prevent microorganisms on the service provider's hands from coming in contact with the client	Prevent the service provider's hands from coming in contact with the client's blood or other body fluids, mucous membranes, and non-intact skin, as well as instruments, other items, or surfaces that have been contaminated with blood or other body fluids	
Mask	Prevent droplets from the service provider's (and other persons in the clinic) nose and mouth which contain microorganisms that are expelled during talking, coughing and breathing from contact with the client	Prevent the mucous membranes of the service provider's nose and mouth from being exposed to splashes of blood and other body fluids; also protects from droplets containing microorganisms.	Mask should cover nose, mouth, and cheeks and extend below the chin.
Eye protectors	No protection documented	Prevent the mucous membranes of the service provider's eyes from being exposed to splashes of blood or other body fluid	
Cap	Prevent microorganisms in service provider's hair or on skin shed from the service provider's head from falling on the sterile field	No protection documented	
Jacket, gown & plastic apron	Prevent microorganisms on the service provider's arms, torso & clothing from coming in contact with the client	Prevents the service provider's skin from being exposed to splashes of blood or other body fluids	A waterproof apron should be worn under the jacket or gown during all procedures in which large amounts of blood & other body fluids are likely (e.g., cesarean delivery)
Shoes	Clean footwear minimises the number of microorganisms brought from other areas of the facility or the outside into the surgical/procedure area	From stepping on contaminated sharps or from falling equipment	<i>Sturdy</i> shoes should be worn in surgery. Health care workers should never walk barefoot in the operating room. Clean plastic or leather boots that cover the whole foot are recommended. Sandals & open shoes are not recommended.

**Table 3.3**  
**Selection of Protective Barriers**

Type of Exposure	Protective Barrier	Example
<b>Low Risk:</b>  Contact with intact skin; no exposure to blood	Gloves not essential	<ul style="list-style-type: none"> <li>• Injection</li> <li>• Minor wound dressing</li> </ul>
<b>Medium risk:</b>  Probable contact with blood, but splashing unlikely	Gloves  Gown or apron may be necessary	Pelvic exam IUD insertion IUD removal Intravenous catheter insertion or removal Handling of laboratory specimens Large, open wound dressing Drawing blood Blood spills
<b>High risk:</b>  Contact with blood likely; splashing probable; uncontrolled bleeding	Gloves Apron Eyewear Mask	Major surgical procedures Oral surgery Vaginal delivery

## Gloves

Gloves reduce the chances of infectious materials entering the body, thereby reducing the risk of disease transmission. Their use is particularly indicated when contact with blood or other infectious materials is required or when handling sharps. *Hands should be washed before putting on gloves and after removing them. New gloves should be used for each patient. (The steps for putting on and taking off gloves are found in Annex 4)*

Three kinds of gloves are used in health care facilities: surgical, examination, and utility/heavy-duty household.

**Surgical gloves** should be worn during all procedures in which there will be contact with the bloodstream or with tissues under the skin (e.g. surgery, pelvic examinations of women in labor). Disposable, sterile surgical gloves are recommended for use whenever possible because it is difficult to properly clean reusable gloves. When disposable, sterile gloves are not available, use high-level disinfected surgical gloves.

**Single-use, nonsterile examination gloves** are used during routine exams. They should be worn for all procedures in which there will be contact with mucous membranes (e.g. IUD insertion, pelvic examination) or where the primary purpose of wearing gloves is to reduce the risk of exposing the service provider to blood or other body fluids (e.g. drawing blood,



working in the laboratory. Examination gloves are clean but not sterile. These gloves should *not* be reused.

**Utility or heavy-duty household gloves** should be worn for handling contaminated instruments and other items, medical or hazardous chemical wastes and linen, for performing housekeeping activities and for cleaning contaminated surfaces. They are reusable after rinsing.

#### **Tips on Glove Use**

- ✓ Wash hands before putting on and taking off gloves
- ✓ A separate pair of gloves must be used for *each* client to avoid cross contamination.
- ✓ Disposable gloves should be discarded after use.
- ✓ Gloves to be reused must be washed and sterilized.
- ✓ Utility or heavy-duty household gloves can be washed and reused several times.
- ✓ Do not use gloves that have cracked, peeling or have detectable holes or tears

Double gloving is not recommended during routine care since it is not that clear that it increases protection and it decreases sensitivity, which could cause an accident.

#### **Handling Sharps Safely**

The major cause of workplace exposure to blood-borne pathogens is through injury from a needle stick or other sharp objects such as scalpel blades, sharp instruments, intravenous (IV) catheters and razor blades. Most of the documented cases of HIV and Hepatitis B and C infections acquired at the workplace have occurred through these types of preventable accidents.

Research done by the Government of Indonesia Health Research Unit in 1998 showed that 85% of immunizations by injection performed by health care workers were done in an “unsafe” manner. Workers used the same syringe for multiple injections, and when checking the sharpness of a needle, they often rubbed their fingers over the tip. Ninety-five percent of workers observed reported a needle stick injury in the previous month. Research in hospitals showed high rates of nosocomial infection, especially of Hepatitis B.<sup>5</sup>

The estimated risk of infection following a needle stick injury varies from one virus to another. For Hepatitis B it ranges from 20-30%, while for Hepatitis C it is 3-10%. The risk for HIV is 0.4%. This variability is related in part to the level of virus in the blood. There is generally a much higher concentration of Hepatitis B virus in the blood than of HIV.

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<sup>5</sup> Address given by: Dr. Udin Muhammad Muslaini, City Health Department Chief, East Java Province to participants of the East Java Provincial Health Department Training on Universal Precautions, December 1999.)

### **Safe Handling of Sharps**

All health care workers using sharps run the risk of infection. Workers should avoid accidental exposure by:

- ◆ Being extremely careful when handling needles or sharps, especially after use. Health care workers should dispose of their own needles and sharps.
- ◆ Placing used needles and syringes directly into a rigid container of ‘sharps’ box for disposal. (*See Chapter V for directions on building a sharps box*)
- ◆ Ensuring sharps containers are located close to the place used, e.g., in the treatment room
- ◆ Disposing of sharps container or washing sharps while wearing utility gloves.
- ◆ Never passing sharps directly from one health care worker to another. Use the “hands free technique” for passing sharps during clinical procedures. (*See Annex 2 for a description of the hands free technique*)
- ◆ Ensuring workers have the best possible visibility especially during exposure-prone procedures.
- ◆ Protecting fingers from injury by using forceps for suturing.
- ◆ Never bending, breaking or recapping disposable needles. Avoid recapping needles; if necessary use the single-hand method. Recapping by both hands will increase the risk of needle sticks. (*See Annex 2 for the steps involved in recapping needles safely*)

### **In Case of Accidents:**

If accidental exposure to blood or other body fluids occurs, the health worker should do the following:

Wash needle sticks and cuts with soap and water. There is no proof that cleaning the wounds with antiseptic or that massaging to make the blood come out will decrease the risk of infection.

Wash splashes to the skin with water and soap.

Irrigate splashes to the eyes with water or saline, with eyes open.

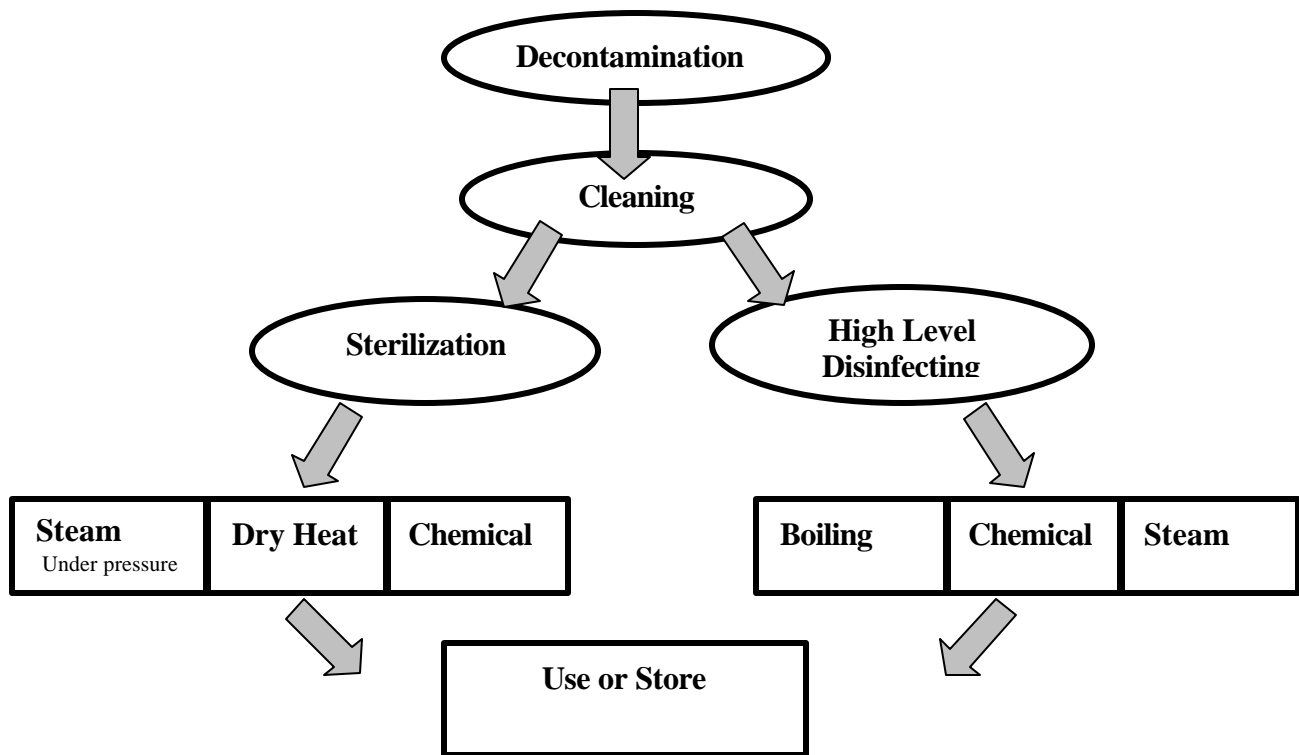
If blood splashes into the mouth, spit it out and gargle several times with clean water.

If blood splashes into the nose, blow the nose and wash with water.

### ➤ Processing Instruments

A three-step process reduces the risk of transmitting infections from instruments and other items to health care workers and clients: decontamination, cleaning, and either sterilization or high-level disinfection.

#### Proper Cleaning of Instruments and Other Items<sup>6</sup>



<sup>6</sup> AVSC, 1999 Page 293

**Table 3. 4**  
**Selecting the Proper Disinfecting Procedure**

Level	Items	Decontamination method
High Risk	Instruments which penetrate the skin and body	<ul style="list-style-type: none"> <li>• Sterilization</li> <li>• Single use of a sterile disposable item</li> </ul>
Moderate Risk	Instruments which contact mucous membranes or non-intact skin	Sterilization Boiling Chemical Disinfection
Low Risk	Equipment which contacts intact skin	<ul style="list-style-type: none"> <li>• Cleaning</li> </ul>

### Step 1: Decontamination Process

Decontamination is the initial step in processing instruments and other items for reuse. Decontamination kills viruses (such as Hepatitis B and HIV) and many other microorganisms. It also makes instruments easier to clean by preventing blood, other body fluids, and tissue from drying on them. All used instruments used should be soaked in a 0.5% chlorine solution for 10 minutes immediately after use to effectively decontaminate them. (*See Annex 2 for the steps to follow in decontaminating*)

#### Preparing a chlorine solution:

A chlorine solution can be made from the following:

- liquid household bleach (sodium hypochloride)
- chlorine compounds available in powder (calcium hypochlorite, chloramines, or chlorinated lime)
- tablets (sodium dichloroisocyanurate)

Because of their low cost and wide availability, chlorine solutions prepared from liquid or powdered bleach are recommended for decontamination. Liquid bleach and compounds containing chlorine are described as having a certain percentage of “active” (or available) chlorine. It is the active chlorine in these products that kills microorganisms. The amount of active chlorine in these products is usually described as a percentage, and differs from one product to another. It is important to know this amount so that a chlorine solution with the appropriate percentage of active chlorine can be prepared. With liquid bleach, this information is often noted on the bottle. If it is not, you may need to contact the manufacturer or use an alternate product. If the bleach is not in its original container or is in powdered form, you may need to check with central stores or the pharmacy to find out the amount of active chlorine in the product.

**Table 3.6<sup>7</sup>**  
**Items Requiring Special Decontamination Attention**

<b>Items</b>	<b>Decontamination Process</b>
Reusable needles and syringe	Fill assembled needles and syringes with 0.5% chlorine solution, Flush (draw in and expel solution) several times, Drop into a 0.5% chlorine solution and let soak for 10 minutes. ✓ Use pickups (lifter, forceps) and wear utility gloves when removing needles and syringes from the solution. ✓ Rinse by flushing three times with clean water or clean immediately.
Gloves	✓ Before removing contaminated gloves, dip hands in a 0.5% chlorine solution to rinse the outer surfaces and remove blood or other body fluids. ✓ Carefully remove gloves without touching the outer surface with bare hands or snapping the gloves (See the illustrations demonstrating the proper way to remove gloves) ✓ If the gloves are disposable or are not intact, dispose of them properly. ✓ If they are to be processed for reuse, place them in a container of 0.5% chlorine solution and soak for 10 minutes before cleaning. ✓ Rinse or clean immediately. ✓ To avoid tearing and puncturing gloves during decontamination, place them in a different container than the one used to decontaminate instruments and other items, if possible.
Storage containers for instruments and other items	Fill containers with a 0.5% chlorine solution and soak for 10 minutes before cleaning. Rinse or clean immediately.

## Step 2: Cleaning

Cleaning is performed to reduce the number of microorganisms from blood, body fluids, tissue, organic material and dirt on used equipment and instruments. If not cleaned first, microorganisms trapped in organic material on these supplies may be protected, even from sterilization and high level disinfection (HLD). Also, organic material and dirt can make the chemicals used in sterilization and HLD less effective. (*See Annex 3 for the steps involved in cleaning instruments*)

<sup>7</sup> Adapted from AVSC, 1999 Page 275

## Use of Detergent

Detergent is important for effective cleaning, since water alone cannot remove protein, oils or grease:

- Dissolve detergent in water to break up, dissolve or suspend grease, oil, and other foreign matter.
- Do not use hand soap for cleaning instruments and other items because it can react with hard water, leaving a residue or scum that is difficult to remove.
- Do not use steel wool or abrasive cleansers such as VIM or Comet as they can scratch or leave grooves that can become a nesting place for microorganisms. This also increases the potential for corrosion of the instruments and other items.

**Table 3.6 <sup>8</sup>**  
**Special Considerations for Cleaning**

Item	Cleaning Procedure
<b>Reusable needles &amp; syringes</b>	<p><i>Always handle needles carefully to avoid injury.</i></p> <ul style="list-style-type: none"> <li>✓ Disassemble the needle and syringe, then wash with detergent and warm water to remove all particles.</li> <li>✓ If a stylet or wire is available, insert it through the needle to ensure it is not clogged.</li> <li>✓ Re-assemble and rinse with clean water by flushing (drawing in and expelling the water) at least three times.</li> <li>✓ Detach the needle and inspect it to make sure the hub area is clean, the needle is not bent, and the tip is not damaged.</li> <li>✓ Check the syringe to make sure the seal is good and the markings are readable.</li> <li>✓ Air-dry needles; air – or towel-dry syringes.</li> </ul>
<b>Gloves</b>	<p><i>To avoid tearing gloves, handle with care. Do not scrub with a brush, and always wash separately from instruments and other items.</i></p> <p>Wash with detergent and warm water. Rinse in clean water until all detergent is gone. Check for holes by inflating the gloves with air and holding them underwater; air bubbles will appear if there are holes in the gloves. Alternatively, fill the glove with water and see if any water leaks out.</p> <ul style="list-style-type: none"> <li>✓ Towel-dry inside and out or air-dry by hanging gloves in an area of low activity.</li> </ul>
<b>Surfaces</b>	<ul style="list-style-type: none"> <li>✓ Examination couches, tabletops, operating tables, walls and other surfaces that may have been contaminated by blood or other body fluids should be cleaned after each client.</li> <li>✓ Wipe surfaces with a cloth dampened with a disinfectant.</li> </ul>

<sup>8</sup> Adapted from AVSC, 1999 Page 299

### **Step 3: Sterilization**

Sterilization is the last step in processing instruments for reuse. Items must be decontaminated and carefully cleaned before sterilization. Sterilization eliminates all microorganisms (bacteria, viruses, fungi, and parasites), including bacterial endospores. Instruments that come in contact with the bloodstream or tissues under the skin should be sterilized. Sterilization can be performed using steam under pressure (autoclaving or moist heat), dry heat, or by soaking in chemicals. Boiling and flaming are not effective sterilization techniques because they do not effectively kill all microorganisms. (*See Annex 3 for the steps involved in sterilizing instruments*)

#### **Steam Sterilization (autoclaving)**

Steam sterilization requires moist heat under pressure. For steam to be produced, there must be sources of both water and heat. Heat can be provided by electricity or any other fuel source (e.g. electric stove, kerosene burner), depending on the type of autoclave in use.

The temperatures required for steam sterilization are lower than those for dry-heat sterilization because moist heat under pressure allows for more efficient destruction of microorganisms.

**Table 3.7<sup>9</sup>**  
**Special Considerations for Sterilization**

Item	Sterilization Procedure
Reusable needle and syringes	<p><i>Whenever possible, use disposable needles and syringes rather than reusable ones since these items are difficult to process.</i></p> <ul style="list-style-type: none"> <li>✓ <b>Steam:</b> Flush needles with boiled water (draw in and expel the water) just before wrapping for steam sterilization. A small amount of water is needed to steam-sterilize instruments and other items with lumens or small openings.</li> <li>✓ <b>Dry-heat:</b> Because high temperatures can dull sharp edges, reusable needles should not be sterilized at temperatures higher than 160°C (320°F). Plastic syringe can be autoclaved, but they will melt at temperatures used for dry-heat sterilization.</li> <li>✓ <b>Chemical:</b> Not recommended, since it is difficult to adequately rinse off the chemical residue, which may interact with or inactivate the solution being injected.</li> </ul>
Gloves	<p><i>Whenever possible, use disposable gloves rather than reusable one, since gloves are difficult to process.</i></p> <p><b>Steam:</b></p> <ul style="list-style-type: none"> <li>✓ Sterilize gloves by themselves</li> <li>✓ Wrap gloves with cloth or paper. Never roll gloves into balls.</li> <li>✓ Place the glove packs loosely in a wire basket on the edge with the thumbs up, away from the walls of the autoclave.</li> <li>✓ If the autoclave has more than one shelf, place the glove packs on the upper shelves; air inside the autoclave tends to move to the bottom of the unit, and placing gloves on the bottom shelf will speed the rate at which the gloves will deteriorate.</li> </ul> <p><b>Dry-heat:</b> Gloves cannot be sterilized by this method because they will melt.</p> <p><b>Chemical:</b> Impractical because of the difficulty in rinsing the chemical residue.</p>

<sup>9</sup> Adapted from AVSC, 1999 Page 351



## High-Level Disinfecting

High-level disinfecting (HLD) is the process that eliminates all microorganisms but does not reliably kill all bacterial endospores, which can cause diseases such as tetanus and gas gangrene. It is the only acceptable alternative when sterilization is not feasible. It is suitable for instruments and other items that will come in contact with broken skin or intact mucous membranes and can be accomplished by boiling, steaming or using chemicals.

## Storing Equipment

Storing sterilized and disinfected equipment properly is as important as the procedures themselves. Properly cleaned equipment is either wrapped or unwrapped. Wrapped items have a shelf life; unwrapped items should be used immediately or within a week if kept in a covered, sterile container.

The length of time a wrapped, sterile item is considered sterile (shelf life) depends on whether or not a contaminating event occurs, not necessarily on how long an item has been stored. Shelf life is affected by factors such as: the type of packing material used; the number of times the pack is handled; the number of people who handle the pack; the cleanliness, humidity, and temperature of the storage area; whether packs are stored on open or closed shelves; and whether the area is dust free.

As mentioned previously, unwrapped items should be used promptly. Instruments should not be stored in solutions as microorganisms can live and multiply in both antiseptic and disinfectant solutions and can contaminate instruments and lead to infection. In addition, antiseptic solutions are made for killing micro-organisms on the skin and mucous membranes, not on objects.

## ➤ Disposing of Wastes Safely

Activities at health care facilities produce domestic waste (household waste), medical waste and hazardous waste. All need proper handling in order to safeguard workers, patients, visitors, and the community.

**Household/General waste** is non-medical waste/non hazardous waste that poses no risk of injury or infection. It is produced from the waiting room, administrative offices and the garden. Examples included food-related trash, plastic containers, bottles, packing materials, and boxes.

**Medical waste** is generated in the diagnosis, treatment, and/or immunization of clients. It includes the following:

- ◆ Blood or other body fluids as well as materials containing fresh or dried blood or body fluids such as bandages and surgical sponges.
- ◆ Organic waste, such as human tissue, body parts, placentas, and products of conception.

- ◆ Sharps (used or unused), including hypodermic and suture needles, scalpel blades, blood tubes, pipettes, and other glass items that have been in contact with potentially infectious materials (such as glass slides and cover slips).

**Hazardous waste** is chemical waste that is potentially toxic or poisonous including cleaning products, some disinfectants, toxic drugs, and radioactive compounds.

To protect the community and health facility staff, the four steps of waste disposal must be properly followed. They consist of sorting, handling, storing and disposal.

### **Sorting**

Separate containers should be used for disposing of general and medical waste.

The person who generates it should put waste in the appropriate containers.

Use colored plastic containers/bags, painted drums, or easily readable labels on containers to help distinguish between general- and medical-waste.

### **Handling**

- ✓ The containers should be emptied daily or when  $\frac{3}{4}$  full.
- ✓ Do not collect medical waste from client-care areas by emptying it into open carts or trolleys. This may contaminate the area and increase risk of injury to staff, clients or visitors
- ✓ The staff must always wear heavy utility gloves and shoes when handling medical waste
- ✓ Staff must wash their hands after handling waste and removing gloves.

### **Interim Storage**

If it is necessary to store waste on site before disposal:

Place waste in an area that is minimally accessible to staff, clients and visitors.

Make sure all containers have lids (so that insects, rodents and other animal cannot get into them), are sturdy, and are waterproof

Short-term storage is usually for several hours, but no more than one or two days.

### **Disposal**

All medical waste should be disposed of carefully to protect the community from accidental exposure to infection.

Burning (incinerating) is preferable to burying the waste since the high temperature destroys microorganisms and reduces the amount of waste by up to 90%.

### **Disposing of Sharps**

- ✓ Dispose of used needles, scalpel blades and other sharps in a puncture resistant disposal container soon after use (the sooner the better).
- ✓ The container could be made from metal or thick plastic and should have a cover. The container should be properly labeled “used needles”.
- ✓ Soak sharps in a 0.5% chlorine solution before destruction in the incinerator.
- ✓ Locate the container close to the point of use (on the medicine trolley and the treatment room)
- ✓ Keep all sharps and sharps disposal containers out of the reach of children.
- ✓ Prevent overflow by sending sharps disposal containers for decontamination or incineration when three-quarters full.
- ✓ Workers should wear heavy-duty gloves and take great care when transporting sharps container
- ✓ Incinerate used equipment at a temperature sufficient to melt the needles.

## CHAPTER IV

### UNIVERSAL PRECAUTIONS PROCEDURES: The Indonesian Setting

*This chapter is designed to make UP practices relevant to the Indonesian primary health care setting.*

In Indonesia, primary health care clinics are the most critical sites of health service delivery. The services offered at these sites: immunizations, family health (mother and child healthcare and family planning), general medicine, emergency care, dental clinics, laboratories, and school health are all potential sources for spreading infection. Practicing Universal Precautions, especially to maintain facility cleanliness, offers a way to prevent the spread of infection.

#### The Immunization Program

Always use a new or correctly reprocessed hypodermic needle and syringe for each injection. This reduces the chance of client exposure to infection. Never change the needle without also changing the syringe. Reusing the syringe on multiple clients – even if the needle is changed – is not a safe practice.

#### Giving Injections:

Universal precautions for immunizations include the following:

Wash hands with soap for 10 - 15 seconds then dry them with a clean, personal or disposable towel before administering the injection.

- ◆ Wash the injection site with soap and water if there is visible dirt.
- ◆ Wipe the client's skin at the injection site with an antiseptic solution to minimize the number of microorganisms and to reduce the risk of infection. Using a fresh swab, wipe in a circular motion from the center outward.
- ◆ If alcohol is used, allow the alcohol to dry in order to provide maximum effectiveness in reducing microorganisms
- ◆ Tell the patient when the injection will occur because unexpected motion by the patient during the injection could cause an accident.

Always use sterile, disposable needles and syringes properly. Keep the needle sterile; do not touch the needle or test its sharpness.

Needles and syringes must be put into the appropriate puncture resistant sharps container immediately after use.

Do not bend, break, or recap disposable needles after use. Use the single-handed recapping method for needles that can be recapped.

If the needles are reusable, decontaminate using a 0.5% chlorine solution for 10 minutes immediately before washing. Sterilize them in an autoclave on the same day.

Use of Multidose Vials:

Before filling a syringe from a multidose vial, the health worker should:

- ◆ Check the vial to be sure there are no leaks or cracks.
- ◆ Check the solution to be sure it is not cloudy and that there is no particulate matter in the vial. (Note: Most solutions that come in vials are clear. One exception is the injectable contraceptive Depo-Provera, which is milky.)
- ◆ Wipe the top of the vial with a fresh cotton swab soaked with a 60-70% alcohol solution; allow it to dry.
- ◆ Never leave a needle inserted in the vial cap for multiple use. This provides a direct route for microorganisms to enter the vial and contaminate the fluid.

**Maternal, Child and Family Planning Services**

Pelvic exams:

- ◆ Always wash hands with soap for 10-15 seconds and then dry them with a clean or disposable towel or allow them to air dry.
- ◆ Use disposable latex gloves or examination gloves and other barriers as necessary (apron, mask, eye protection).
- ◆ Properly prepare sterile equipment needed. Make sure not to contaminate the equipment.
- ◆ Put equipment into a basin filled with 0.5% chlorine solution immediately after use, and sterilize the equipment on the same day.
- ◆ Dispose of waste into the medical waste bin.

Norplant insertion and removal:

- ◆ Wash hands with antiseptic soap for 1 minute under running water and dry them.
- ◆ Use sterile or HLD gloves.
- ◆ Prepare the sterile equipment needed. Do not contaminate the equipment.
- ◆ Administer local anaesthetic by disposable needle.
- ◆ Use the single-handed method for recapping needles that can be recapped.
- ◆ Decontaminate, clean and sterilize equipment immediately after use and store properly. Do not put scalpel blades and needles on folded fabrics.
- ◆ Dispose of waste in the medical waste bin.

Birth control injections:

- ◆ Wash hands with soap for 10-15 seconds and dry them with a clean or disposable towel or allow them to air dry.
- ◆ Use disposable needles and keep the needle sterile. Do not touch the needle or test for sharpness.
- ◆ Needles and syringes should be disposed of in a puncture-proof container immediately after use. Do not bend, break or recap disposable needles.

IUD insertion and removal:

- ◆ Always wash hands with soap for 10-15 seconds and then dry them with a clean or disposable towel or allow them to air dry.
- ◆ Use disposable latex gloves and other barriers as necessary (apron, mask, eye protection).
- ◆ Prepare the sterile equipment needed and do not contaminate it.
- ◆ Perform the hands-free technique when passing instruments and equipment.
- ◆ Decontaminate equipment immediately after use then wash, process, and store.
- ◆ Dispose of waste in the medical waste bin.

Hemoglobin testing:

- ◆ Wash hands with soap for 10-15 seconds and dry them with a clean or disposable towel or allow them to air dry.
- ◆ Use gloves to avoid contact with blood.
- ◆ Use sterile needles, one needle for each patient.
- ◆ Decontaminate the equipment after use then wash, process and store it.

Normal delivery:

- ◆ Wash hands with antiseptic soap for 1 minute under running water then dry them.
- ◆ Wear sterile or HLD gloves, an apron, a mask, eye protection, and shoes.
- ◆ Prepare sterile equipment needed and do not contaminate it.
- ◆ Use the hands-free technique when passing instruments.
- ◆ Decontaminate the equipment after use. Wash, process and store it.
- ◆ Decontaminate surfaces before mopping or wiping.
- ◆ Dispose of waste in the medical waste bin.

## **General Medicine and Emergency Room Services**

Wounds:

Dressing an open wound always risks contact with the patient's blood/body fluid.

- ◆ Wash hands with soap for 10-15 seconds then dry them.
- ◆ Use nonsterile, single-use examination gloves.

Accidents:

When accidents happen, there is often not enough time for adequate sanitary preparation.

- ◆ Make sure to wash hands and wear gloves when carrying, cleaning and preparing the patient (triage).
- ◆ Wear an apron and a mask.

IV insertion or removal:

- ◆ Always wash hands with soap for 10-15 seconds and then dry them with a clean or disposable towel or allow them to air dry.
- ◆ Wear disposable examination gloves.
- ◆ Remove the needle or catheter from the IV instrument and dispose of it in the sharps box.
- ◆ Dispose of all IV instruments and leftover fluids. Microorganisms can survive and multiply in IV fluid. Do not reuse IV equipment and solution bottles as they can transmit infections to other patients.
- ◆ Do not use IV equipment and solution bottles on more than one patient.

Minor surgery (suturing wounds, circumcision):

- ◆ Wash hands using antiseptic soap for 1 minute under running water then dry them.
- ◆ Wear sterile or HLD gloves. Wear other barriers (apron, mask) as necessary.
- ◆ Prepare sterile equipment needed, and do not contaminate it.
- ◆ Administer anesthesia by using a disposable needle
- ◆ Use the hands-free technique when passing equipment (including sharps).
- ◆ Decontaminate equipment immediately after use. Wash, process and store it.
- ◆ Do not put scalpels, razors or needles on folded fabrics.
- ◆ Dispose of waste in the medical waste bin.

## **Laboratory Services**

The following universal precautions should be taken in labs:

Lab workers should always wash hands and use examination gloves and other protection (apron, mask) when handling blood.

Used needles and sharps should be placed in a puncture-resistant container.

Used gloves and other contaminated waste should be disposed of properly.

## **School Health Program**

The school health program offers immunizations, haemoglobin tests (finger puncture) and dental checks. All of the above-mentioned universal precautions apply.

### **Housekeeping: Maintaining Health Center Cleanliness**

Housekeeping staff have a vital role to play in maintaining health center hygiene, cleanliness, and sterility. Cleaning serves to reduce the number of microorganisms and improve the appearance of the facility. Housekeeping staff must be made aware of infection risks and trained to minimize their chances of exposure to infection through the handling of contaminated materials.

- ◆ A cleaning schedule should be created and posted where all staff responsible for housekeeping can see it.
- ◆ Maintenance staff should always wear gloves, preferably heavy utility gloves, and shoes when cleaning client-care areas. Utility gloves should be worn when using chlorine solutions and other disinfectants and also during the cleaning of toilets, latrines, and bath/wash rooms.
- ◆ Cleaning should be done in a way that minimizes the scattering of dust and dirt that may contain microorganisms. A damp or wet mop or cloth should be used to clean walls, floors and surfaces. Dry dusting or sweeping should be avoided as it increases the spread of dust and microorganisms.
- ◆ Scrubbing is the most effective way to remove dirt and microorganisms. Scrubbing should be a part of every cleaning procedure.
- ◆ Surfaces such as walls should be washed from top to bottom so that debris falls to the floor; the floor should be cleaned last. The highest fixtures should be cleaned first, for example, ceiling lamps first, then shelves, then tables, and then floor.
- ◆ Cleaning solutions should be changed when they appear dirty. The ability of the disinfectant to kill potentially infectious microorganisms is reduced when the solution contains a lot of soil.

Supplies and equipment used for cleaning need to be cleaned to prevent the spread of infections. Housekeeping equipment such as mops, buckets, and cloths should be decontaminated, cleaned in detergent and water, rinsed in clean water, and allowed to dry before being reused. Contaminated cleaning equipment spreads, rather than reduces, microorganisms in the environment.

Toilets, latrines, and bath/ wash rooms should be cleaned once or several times daily depending on the use of disinfectant. Separate supplies and equipment should be used for these areas.

Spilled contaminated material should be cleaned immediately to prevent the spread of infection and the possibility of people falling. Every spilled solution should be considered as infectious. If the spill is small, clean it with a wet mop and 0.5% chlorine solution. If the spill is large, flood the area with a 0.5% chlorine solution then mop it up. Afterwards, clean the area one more time with a disinfectant.



**Table 4.1<sup>10</sup>**  
**Schedule for Cleaning Client Areas**

Schedule	Activity
At the beginning of each day	<ul style="list-style-type: none"> <li>▪ Clean horizontal surfaces (operating/procedure tables, examination couches, chairs, trolley tops or Mayo stands, lamps, counters and office furniture) with a cloth dampened with water, and clean floors with a mop dampened with a disinfectant to remove dust and lint that have accumulated overnight.</li> </ul>
Between clients	<ul style="list-style-type: none"> <li>▪ Clean operating/procedures tables, examination couches, trolley tops or Mayo stands, counters, lamps, and any other potentially contaminated surfaces in the operating theater and procedure rooms with a cloth dampened with a disinfectant cleaning solution. Alternatively, spray the solution onto the surfaces, and wipe with a cloth dampened with water.</li> <li>▪ Immediately clean spills of blood or other body fluids with a 0.5% chlorine solution.</li> <li>▪ Clean visibly soiled areas of the floors, walls, or ceiling with a mop or cloth dampened with a disinfectant cleaning solution.</li> <li>▪ Put waste in a leak-proof container, and empty the container when it is <math>\frac{3}{4}</math> full.</li> </ul>
At the end of each clinic session or day	<ul style="list-style-type: none"> <li>▪ Wipe down all surfaces including counters, tables, sinks, lights, door handles/plates, and walls with a cloth dampened with a disinfectant cleaning solution, or spray the solution onto the surface. Remember to wipe from top to bottom. Pay particular attention to operating/procedure tables, making sure to clean the sides, base, and legs thoroughly. Rinse sinks with clean water after cleaning.</li> <li>▪ Clean the floors with a mop soaked in a disinfectant cleaning solution.</li> <li>▪ Check sharps-disposal containers and remove and replace them if they are <math>\frac{3}{4}</math> full.</li> <li>▪ Remove medical or hazardous chemical waste, making sure to burn or bury it as soon as possible to limit contact with potentially infectious waste.</li> <li>▪ Wash the waste containers with a disinfectant cleaning solution and rinse with water.</li> </ul>
Each week	<ul style="list-style-type: none"> <li>▪ Clean ceilings with a mop dampened with a disinfectant cleaning solution.</li> </ul>

<sup>10</sup> Adapted from AVSC 1999, Page 423

## CHAPTER V

### UNIVERSAL PRECAUTIONS: ADAPTATIONS IN RESOURCE POOR AREAS

*This chapter looks at alternative solutions to achieve universal precautions compliance where resources or infrastructure pose barriers.*

The implementation of UP requires dedication and discipline from workers, appropriate instruments and equipment, and sufficient time for preparation. In countries with limited resources or poor infrastructure, instruments, equipment, and sufficient time may not be available. A facility must have alternative methods to be used in emergencies or when conditions necessitate adaptations.

#### **Inadequate Water**

Where running water is unavailable:

- Use a bucket with a tap that can be turned off when scrubbing hands and turned on when rinsing.
- Use a bucket and scoop and have another staff member pour the water over the hands of the one washing.
- Add antiseptic to water.

Where water is unavailable:

Alcohol handrub:

- If hands are not contaminated with blood or other organic material, rub with an alcohol solution consisting of 2 ml of glycerin, propylene glycol or sorbitol and 100 ml of 60-90% alcohol.
  - Rub hands together until they are dry

*Alcohol handrub is not effective if hands are visibly dirty with blood or soil.*

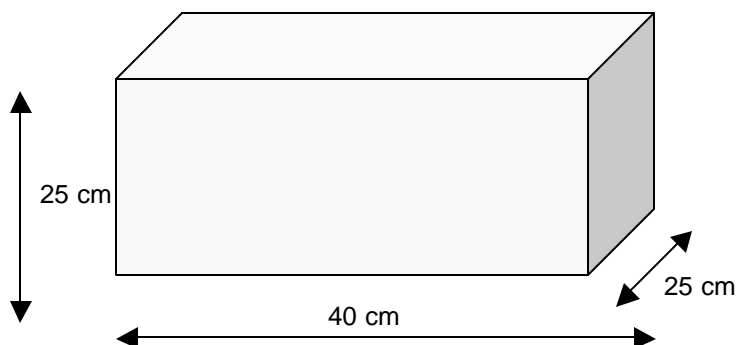
#### **No Gloves**

- ◆ In routine situations requiring sterile conditions, wash hands in an antiseptic solution for one minute under running water before and after handling the patient, then dry them. If there is no water, use an alcohol and glycerin solution.
- ◆ In emergencies where blood is present, use plastic bags or other waterproof materials instead of gloves.

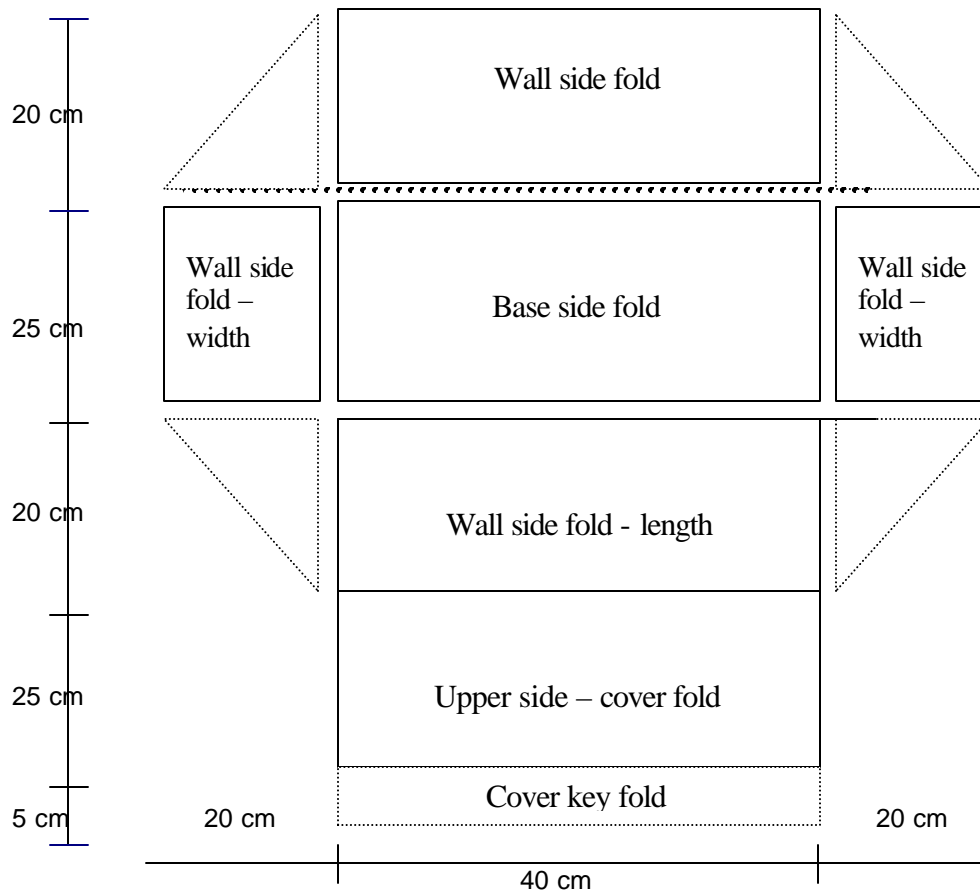
### No 'Sharps' Container

An alternative box for needle and other sharp materials can be made out of carton and folded into shape.

#### BOX SIZE (CONTAINER) FOR NEEDLES MADE OF CARTON DUPLEX



PICTURE: BOX DIMENSION

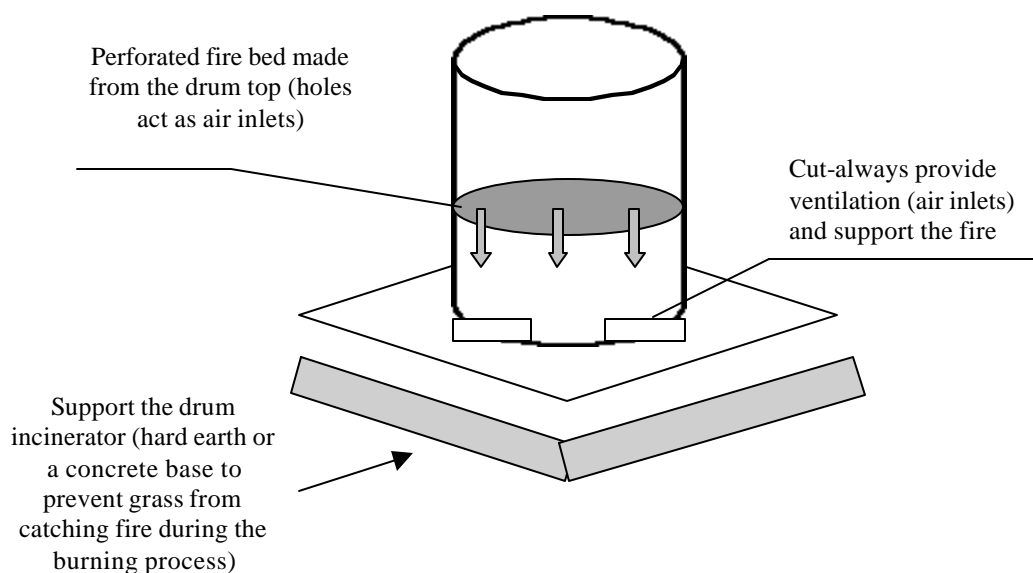


PICTURE OF THE BOX MATERIAL FOLD

## No Incinerator

### Burn dry waste in a used kerosene drum:

- Place the drum on hard ground or on a base of bricks or pebbles.
- Note the wind direction.
- Ensure sufficient ventilation.
- Fit the drum with a perforated support sheet.
- Do not scatter dust and ashes.



Bury Waste:

Waste must have a volume of less than 5 liters a day.

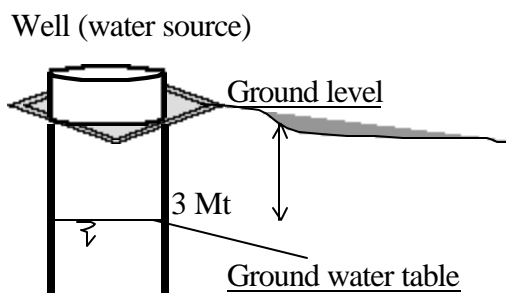
Bury where water table is more than 3 meters below surface and where the absorption rate is 1-30 minutes per inch.

Site must be 50 meters from water sources.

If site is not level, bury waste at the bottom of the slope.

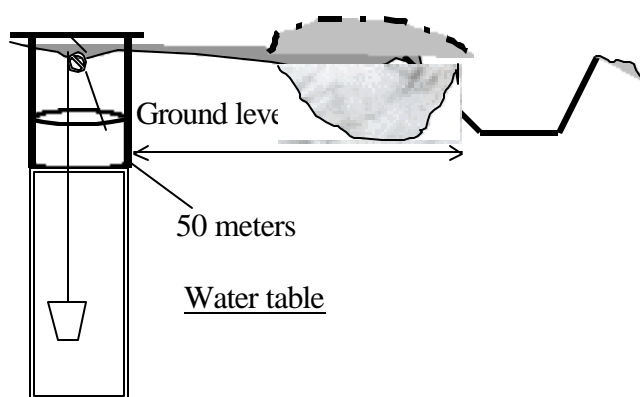
Site must not be in a flood-prone area, on a farm, or on land that will be developed.

- The bottom of the pit should be 3 meters above the water table



Burial site

At least 50 meters away from any water source



The site:

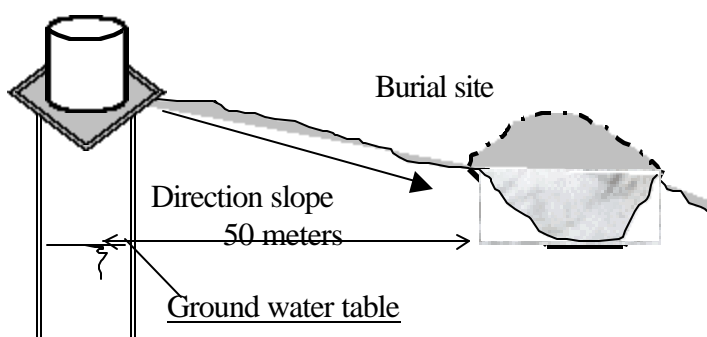
Should be in an area downhill from any wells

Will not flood

Has proper drainage

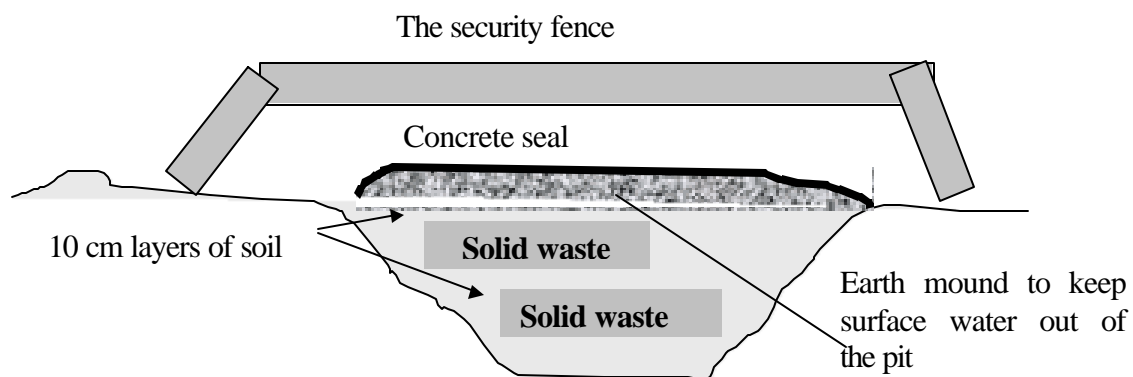
Should not be located on land that will be used for agriculture or development

Well (water source)



### Waste Burial Site:

- Width of hole should be 1-2 meters
- Depth should 2-5 meters (according to the surface of water table)
- The minimum distance between the bottom of the hole and the water table must be 3 meters
- Clinical waste must be covered with 10 -30cm soil
- If waste level is 30-50cm from the top of the hole, it must be closed tightly with a layer of cement
- A hole, which has been enclosed by a cement layer, cannot be used again.



## CHAPTER VI

### MANAGING UNIVERSAL PRECAUTIONS AT PRIMARY HEALTH CARE SITES

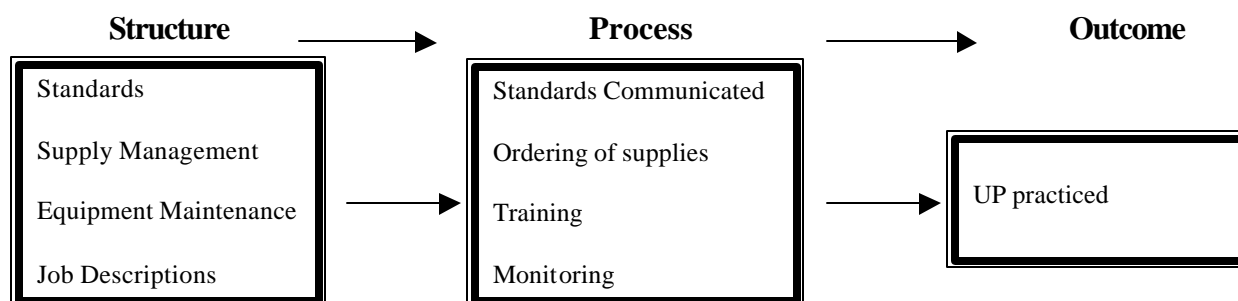
Universal precautions are designed to reduce the risk of transmission of infection, particularly through blood borne diseases, to patients and health care workers in health facilities. In order to minimize the chance of transmission, emphasis must be placed on:

- ◆ Creating awareness of risk factors,
- ◆ Training health facility workers in proper infection prevention procedures,
- ◆ Ensuring that the necessary tools and supplies are available,
- ◆ Establishing monitoring systems that support behavior change.

Health workers need to be motivated to protect themselves and others from infection. This can be accomplished through training and educating workers to change their attitudes and behaviour. Institutions should adopt clear policies and standard operating procedures on UP and strictly enforce them. Managers should be trained to supervise, evaluate and monitor clinic activities. Health directorates need to support UP compliance by providing adequate technology, supplies and resources. Compliance with infection prevention procedures cannot succeed without organizational commitment to these basic principles:

- ◆ Infection prevention must be integrated into a quality management program.
- ◆ Standards for infection prevention and facility cleanliness should be developed and communicated to all staff.
- ◆ A monitoring and support system for infection prevention practices should be in place.

#### Quality Management



## Providing Adequate Support and Resources

As a unit of the health service, the health care center must meet general health requirements.

### Basic Requirements:

- ◆ A functioning sink for hand washing and instrument cleaning and an acceptable plan for instances when water is not available.
- ◆ A means for decontaminating, cleaning and sterilizing instruments.
- ◆ A container for disposing of needles and other sharp objects.
- ◆ Equipment maintenance schedules and procedures.
- ◆ Supply ordering, maintenance, and dispensing schedules.

(See Annex 3 for a list of systems and equipment necessary for a fully functioning UP program).

**Table 5.1**  
**Example of Supply Maintenance Schedule**

Supply Item	Location	Quantity Used (per wk.)	Dispensing Schedule	Responsible Party	Supervisor
<b>Disposable Gloves:</b>	Examination Room # 1	60	Every Monday	Clerk	Puskesmas Manager
	Laboratory	20			
	Sterilization Area	10			
	Emergency Room	10			
Total Gloves Required/ weekly		100			
<b>Chlorine Solution</b>					

## Educating and Training Staff

Successful implementation of UP requires initial and refresher courses for staff in proper procedures for hand washing and glove use; the handling of sharps; the processing of equipment; waste disposal; and the cleaning of spills and contaminated linen. Procedures must be posted in strategic locations, e.g., over sinks, in immunization rooms, or where equipment is sterilized.

Most importantly, staff must be made aware of the disease transmission cycle and the risks to which they are exposed. Studies have shown that health workers are willing to change attitudes and behaviours related to infection prevention when they understand the reason for, and importance of a procedure.

A basic course in infection prevention should include:

1. The disease cycle and potential routes of infection
2. The role of staff in disease transmission
3. The methods to minimize infections: *barriers* such as gloves, *actions* such as handwashing, and *procedures* such as decontamination, cleaning, and sterilization
4. Demonstration and practice of correct procedures



## Monitoring

Without proper follow up, staff will find it difficult to maintain infection prevention behaviours. Monitoring behaviour change involves the following activities:

Developing a staff supervision schedule that includes observation of staff infection prevention practices, discussion of problems, and suggestions for improvement.

**Table 5.2**  
**Example of Supervision Plan for Infection Prevention Compliance**

Supervisee	Supervisor	Time	Activity	Performance Improvement Plan
Midwife	PHC Manager	Twice Monthly	Observation: Pelvic Exam	1. Wash hands after client encounter 2. Use new gloves for each patient
Dentist	District Official	Monthly	Observation: Client Encounter	1. Wash hands before donning gloves 2. Use clean gloves for each patient
Housekeeper	Nurse	Weekly	Observation: Chlorine Solution Preparation	1. Use proper proportions

Developing indicators for satisfactory staff compliance.

**Table 5.3**  
**Performance Indicators on Universal Precautions**

<b>Indicator 1</b>	Hand washing to prevent cross infection
<b>Indicator 2</b>	Protective barriers used
<b>Indicator 3</b>	Sharps are handled safely to minimize the risk of injury
<b>Indicator 4</b>	Instruments are processed properly
<b>Indicator 5</b>	Waste disposed of safely

*(See Annex 2 and 3 for checklists to identify specific steps to be followed for each indicator.)*

- ◆ Providing checklists for self-monitoring and supervision.

Checklists provide a process to determine whether the indicators are being met. They can be used for reminding staff of appropriate universal precautions steps or for monitoring of staff compliance by supervisors.

*(See Annex 3 for checklist examples.)*

## ANNEX 1: STANDARDS<sup>11</sup> FOR PRIMARY HEALTH CARE SETTINGS

### **1.1 Physical Structure:**

#### **Building:**

- ◆ The building should be protected from floods, insects and rodents and pollution.
- ◆ The roof should be constructed from strong material that resists leaks and that will not become a nesting place for insects and rodents.
- ◆ The ceiling should be made from good material, be a bright color with a flat surface, and be easy to clean. The height should be a minimum of 2.75 meters.

#### **Floors:**

- ◆ Floors should be flat, strong, water resistant, not slippery, dry, a bright color, and easy to clean.
- ◆ Floors likely to be covered by water should be constructed on a slope of 2-3% in order for the water to drain freely.

#### **Walls:**

- ◆ The walls must be flat, bright colors, and easy to clean.
- ◆ Walls which are likely to be in contact with water need to be made of strong, water resistant material and covered by ceramic or porcelain tiles.

#### **Ventilation:**

The width of the ventilation system is a minimum of 20% of the room width.

- ◆ The system must provide good air circulation both inside and outside the room.
- ◆ If ventilation is poor, a fan must be used.

#### **Lighting:**

- ◆ Lights should be non-glaring.  
Each room should have lighting sufficient for the activities undertaken.

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<sup>11</sup> A) Ditjen PPM-PLP, Dep.Kes.RI, *Pedoman Sanitasi Rumah Sakit di Indonesia*, Jakarta 1992  
B) Peraturan Menteri Kesehatan RI Nomor: 986/Menkes/Per/XI/1992, tentang *Persyaratan Kesehatan Lnhgkungan Rumah Sakit*  
C) Mara, Ducan, *Sewage Treatment in Hot Climate*, John Willey and Sons, 1976  
D) Salvato, Jr. Joseph A. *Environmental Engineering and Sanitation*, 1972  
E) Kebijakan Operasional Repelita V Program Air Bersih Ditjen Cipta Karya DPU

### **Bathroom and toilet:**

Centers should include a toilet (closet, filtration system and sink) that is not connected to a service activity room.

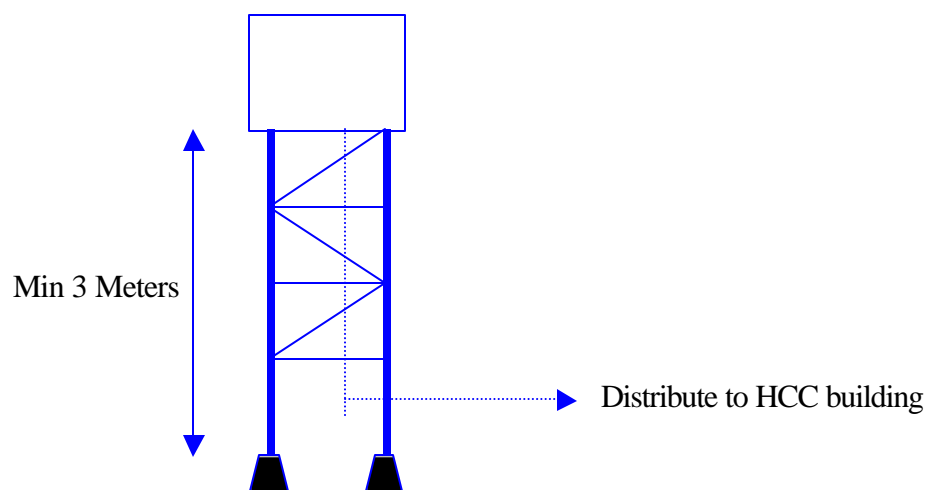
- ◆ Separate toilets should be provided for staff and patients.
- ◆ Adequate, clean, running water must be available.
- ◆ The room must always be kept clean.
- ◆ The slope must be 2-4% and contain a water seal.
- ◆ The toilet must be well ventilated.

## **1.2 Water and Drainage**

### **Water:**

- ◆ *It is estimated that the amount of water required for non-treatment clinics is 3,000 liters per day minimum.*
- ◆ Drainage must be swift and regular either via a gravitation system with an elevated reservoir or through use of an electric pump.

**Picture 1.1**  
**Water Distribution using an Elevated Reservoir**



To guarantee a satisfactory distribution of water, the height of the reservoir must be a minimum of 3 meters from the surface of the ground.

### **Wastewater drainage system:**

- ◆ There should be no pressure on the drain cover.

The slope of the drain should be 2-4% to ensure wastewater runs out quickly but does not cause flooding.

There must be a grit chamber.

To facilitate operation and maintenance, there should be openings and a control switch every 3 meters.

The draining of wastewater from the bathroom and toilet should be completely separate from that of the laboratory.

The drainage system must use a septic tank/tub that has a filtration area that takes into consideration the ground filtration capacity (percolation rate), ground slope, and surface.

The construction of the septic box/tank must be strong, waterproof and have a gas ventilation outlet.

The volume of the tank should be adequate for its use and it should be thoroughly cleaned every 1 to 5 years.

## **1.3 Health and Hygiene of Workers**

Health workers must strictly maintain their health and personal hygiene. Below are guidelines that should be considered at the workplace.

- ◆ Body and clothing are always clean.
- ◆ Nails are cut short.
- ◆ Hair is tidy and does not spread onto the shoulders.
- ◆ Beards are trimmed. When masks are used they should cover both chin and beard.
- ◆ Face make up is not worn.

## **1.4 Safe Practices in the Workplace**

- ◆ No smoking, eating or drinking.
- ◆ No storing of food and drink in refrigerators used for medicines and by the lab for specimens (blood, urine, stool and sputum)
- ◆ Those wearing contact lenses must use eye protection and bring glasses as a secondary precaution.
- ◆ Employees wear a white coat with long trousers and a photo identity card.
- ◆ Employees wear comfortable shoes and cover their legs. Open-toed shoes should not be worn.
- ◆ Employees wear boots in areas where there is a possibility of contamination.
- ◆ Employees wash hands before starting work and before leaving the workroom.
- ◆ The exit and entryways of rooms are not blocked by anything.
- ◆ Doors can be closed but can remain unlocked.
- ◆ Only designated staff and permitted visitors should enter treatment rooms.

## ANNEX 2: UNIVERSAL PRECAUTIONS PROCEDURES

### **2.1 Hand Washing**

#### **Routine Hand Washing:** *(Appropriate for most situations)*

- ✓ Use soap and wash for 10 – 15 seconds under running water.
- ✓ Keep soap on a dish with drainage to avoid contamination with microorganisms.
- ✓ Weave fingers and thumbs together and slide back and forth.
- ✓ Wash the areas commonly missed, such as the fingernails.
- ✓ Do not turn off the faucet with clean hand.
- ✓ If there is no corner faucet use tissue to turn off the faucet.
- ✓ Dry hands with a clean, personal towel, paper towel or air dry.
- ✓ Do not touch any unclean surfaces.

#### **Antiseptic Hand Washing:** *(Important before handling newborns or others at high risk)*

Use antiseptic soap and wash hands for 1 minute in running water.

Dry with a clean, personal towel, paper towel or air dry.

- ✓ Do not turn off the faucet with clean hand, if there is no corner faucet use tissue to turn off the faucet.

Solid antiseptic soap should be stored in a container with a hole in the bottom so the soap will not be flooded with water.

#### **Surgical Hand Washing (hand scrub):** *(before surgery)*

- ✓ Clean hands, nails and arms using antiseptic soap (4% w/v chlorhexidine or detergent with povidone iodine 0,75%).
- ✓ Scrub for 3-5 minutes: 5 minutes for the first washing and 3 minutes for each subsequent washing on the same day.
- ✓ Hold hands above elbows.
- ✓ Dry hands with sterile towel and do not turn off the faucet with the cleaned hands.

## **2.2 Glove Use**

### **How to Put on Sterile/Surgical Gloves:**

- ✓ Prepare a large, clean, dry area for opening the package of gloves.
- ✓ If the gloves have been processed and are wrapped in a package, lay them on a sterile or high-level disinfected surface.
- ✓ Open the outer gloves package and then perform a surgical hand scrub, or perform a surgical hand scrub and then ask someone to open the package for you.
- ✓ Dry hands completely.
- ✓ Open the inner glove wrapper, exposing the cuffed gloves with the palms up.
- ✓ Pick up the first glove by the cuff, touching only the inside portion of the cuff (the side that will be touching your skin when the glove is on).
- ✓ While holding the cuff, slip your other hand into the glove. (Pointing the fingers of the glove toward the floor will keep the fingers open).
- ✓ Be careful not to touch anything, and hold the gloves above waist level.

Pick up the second gloves by sliding the fingers of the gloved hand under the cuff of the second glove.

Be careful not to contaminate the gloved hand with the ungloved hand as the second glove is being put on.
- ✓ Put the second gloves on the ungloved hand by maintaining a steady pull through the cuff.
- ✓ Adjust the position of the glove fingers until the gloves fit comfortably.

### **Removing Gloves:**

- ✓ Rinse gloved hands in a basin of decontamination solution (Chlorine 0.5%) to remove blood or other body fluids.
- ✓ Grasp one of the gloves near the cuff and pull it part of the way off. The glove will turn inside out. It is important to keep the first glove partially on your hand before removing the second glove to protect you from touching the outside surface of either glove with your bare hands.

Leaving the first glove over your fingers, grasp the second glove near the cuff and pull it part of the way off. The glove will turn inside out. It is important to keep the second glove partially on your hand to protect you from touching the outside surface of the first glove with your bare hand.
- ✓ Pull off the two gloves at the same time, being careful to touch only the inside surfaces of the gloves with your bare hands.
- ✓ Wash hands immediately after gloves are removed.

### **2.3 Handling Equipment**

#### **Recapping Techniques for Used Needles:**

- ✓ Place needle cap on a hard flat surface.
- ✓ With one hand, hold syringe and use needle to pick up the cap.
- ✓ When the cap completely covers the needle, use the other hand to place cap firmly on the needle hub.

#### **“Hands Free Technique” for Passing Sharps:**

Unprotected sharp items should not be passed directly from one person to another:

- ✓ The assistant places the instrument or other item in a sterile kidney basin or in a designated “safe zone” in the sterile field.
- ✓ The assistant alerts the service provider to the presence of the instrument or other item in the kidney basin or “safe zone”.
- ✓ The service provider picks up the instrument or other item, uses it, and returns it to the safe zone or basin.

### **2.4 Processing Instruments Procedures**

The three-step procedure for processing instruments consists of decontamination, cleaning and sterilization. The steps to each follow:

#### **Decontamination Steps:**

- ✓ Prepare the chlorine solution daily and change the solution when it is cloudy or heavily contaminated with blood or other body fluids (Note: If powdered chlorine was used, the solution was cloudy from the beginning).
- ✓ Immediately after use, drop the instruments into a 0.5% chlorine solution and soak for 10 minutes.
- ✓ After 10 minutes, remove the items from the chlorine solution and either rinse with water or clean immediately. Do not leave items in the solution for more than 10 minutes, since excessive soaking in the solution can damage instruments.
- ✓ Always wear utility gloves when removing items from the solution.

### **Cleaning Steps:**

*Note: All items should be dried before sterilization but items to be high-level disinfected by boiling or steaming do not need to be dried first.*

- ✓ Wear utility gloves, goggles, and a mask and protective eyewear when cleaning instruments.
- ✓ Use a soft brush or old toothbrush, detergent, and water; scrub instruments vigorously to completely remove all blood, other body fluids, tissue, and other foreign matter.
- ✓ Hold items under the surface of the water while scrubbing and cleaning to avoid splashing.
- ✓ Disassemble instruments with multiple parts, and be sure to brush in the grooves, teeth, and joints of instruments and other items where organic material can collect and stick.

Rinse instruments thoroughly with clean water to remove all detergent.

- ✓ Allow items to air-dry, or dry with a clean towel. (Instruments and other items should be dry before chemical high-level disinfection to avoid diluting the chemicals, which may decrease their effectiveness).

### **Steps for Steam Sterilization:**

- ✓ Decontaminate, clean and dry all instruments and other items to be sterilized.

Open or unlock all jointed instruments and other items, such as hemostats and scissors and disassemble those with sliding or multiple parts; this allows steam to reach all surfaces.

Do not wrap gloves into tight balls.

If instruments and other items are to be wrapped before steam sterilization, use two layers of paper, newsprint, or cotton or muslin fabric (do not use canvas).

Instruments and other items should not be placed in a closed container; if drums are being used, make sure the holes of the drums are open.

Arrange all packs, drums or unwrapped items in the chamber of the autoclave in a way that allows steam to circulate freely.

Follow manufacturer's instructions but in general, sterilize wrapped items for 30 minutes and unwrapped items for 20 minutes at 121°C (250°F) and 106 kPa (1 atm or 15 lb/in<sup>2</sup>, 1 kgf/cm<sup>2</sup>, 776 torr, 776 mmHg) pressure.

Time with a clock, watch, or timer. It is best to use a timer, which helps ensure that the appropriate timing is achieved. Do not begin timing until the autoclave reaches the desired temperature and pressure.

- ✓ If the autoclave is automatic, the heat will shut off and the pressure will begin to fall once the sterilization cycle is complete.
- ✓ If the autoclave is not automatic, turn off the heat or remove the autoclave from the heat source after 30 minutes (wrapped items) or after 20 minutes (unwrapped items).
- ✓ Wait until the pressure gauge reads "zero" to open the autoclave which could take up to 30 minutes.
- ✓ Remove items (using sterile pickups) from the autoclave.
- ✓ To prevent condensation after removing packs or drums from autoclave, place them on a surface padded with paper or fabric until they are cool.



- ✓ Wait until items reach room temperature (which may take up to several hours) before storing.

**Sterilization of Liquids:**

Liquids can be sterilized only by steam sterilization (autoclaving), not by dry-heat or chemical methods.

The following special procedures must be followed to safely and properly sterilize liquids:

- ✓ Liquids must be sterilized separately from other items.

Place liquids in heat-resistant glass bottles (e.g. Pyrex) with self-sealing caps.

Autoclave at the same temperature and pressure used to autoclave other items (temperature, 121°C (250°F) pressure, 106 kPa /1 atm).

The time necessary to autoclave liquids depends on many factors, the most important of which is the volume of liquid being autoclaved. In general, the suggested times are as follows:

Volume of Liquid	Autoclave Time
75-100 ml	20 minutes
250-500 ml	25 minutes
1.000 ml	30 minutes
1.500 ml	35 minutes
2.000 ml	40 minutes

- ✓ Once sterilization is complete, the chamber pressure must be released slowly – over a period of at least 10-15 minutes. Rapid release of the pressure will cause the liquids to boil violently which may cause the bottle caps to blow off or the bottles to burst.

Open autoclave door slightly and allow the liquids to cool for approximately 30 minutes before removing the bottles.

**Dry-Heat Sterilization:**

For dry-heat sterilization to be achieved, a constant supply of electricity is necessary. Only glass or metal objects can be sterilized by this method:

Steps in Dry Heat Sterilization:

Decontaminate, clean and dry all instruments and other items to be sterilized.

Either (1) wrap instruments or other items using foil or double-layered cotton or muslin fabric; (2) put unwrapped instruments on a tray or shelf; or (3) place instruments and other items in a covered metal container.

Because dry-heat sterilization works by raising the temperature of the entire item to the designated temperature, it is **not** necessary to open or unlock hinged instruments or to disassemble those with sliding or multiple parts.

Place items in the oven, and heat to the designated temperature. Use the chart below to determine the appropriate amount of time to sterilize items at different temperatures.

Temperature	Time*
170°C (340°F)	1 hour
160°C (320°F)	2 hours
150°C (300°F)	2.5 hours
140°C (285°F)	3 hours

*\* This is the amount of time that instruments and other items must be kept at the desired temperature to ensure that sterilization is achieved. Keep in mind that the total cycle time – which includes heating the oven to the desired temperature, the sterilization time, and cooling time - is usually twice as long as the time noted above.*

Do not sterilize sharp instruments and needles at temperatures higher than 160°C because dry heat can dull them.

- ✓ Leave the items in the oven to cool before removing.
- ✓ When they are cool, remove items (using sterile pickups for unwrapped items) and use immediately or store.
- ✓ Storage: Wrapped items: can be considered sterile as long as they remain intact and dry.  
Unwrapped items: keep in a covered, dry, sterile container for up to one week.

**Chemical Sterilization**

Chemical sterilization is used for instruments and other items that are heat-sensitive or when heat sterilization is unavailable.

Cidex (which contains glutaraldehyde) is a commonly available solution used for chemical sterilization. Glutaraldehyde is irritating to the skin, eyes, and respiratory tract. Wear gloves, limit exposure and keep the area well ventilated. The length of time that commercially available glutaraldehyde solutions can be used varies from 14-30 days; always follow the manufacturer's instructions. Solutions should be replaced any time they become cloudy.

**Remember:**

- ✓ Formaldehyde is potentially cancer causing and extremely irritating to the skin, eyes, nose and respiratory tract. Therefore, routine use of formaldehyde for sterilizing instruments and other items is no longer recommended.
- ✓ Do not store instruments or other items, such as scalpel blades and suture needles, in solutions- always store them dry. Microorganisms can live and multiply in both antiseptic and disinfectant solutions, which can contaminate instruments and other items, leading to infections.
- ✓ Always wear gloves when handling chemical solutions.

**Steps in Chemical Sterilization**

- ✓ Decontaminate, clean and thoroughly dry all instruments and other items to be sterilized. Water from wet instruments and other items dilutes the chemical solution, thereby reducing its effectiveness.
- ✓ Prepare glutaraldehyde or other chemical solution by following the manufacturer's instructions or use the solution that was prepared previously, as long as it is clear (not cloudy) and has not expired. (Ideally, an indicator strip should be used each time the solution is to be used to determine if the solution is still effective).
- ✓ After preparing the solution, put it in a clean container with a lid. Always mark the container with the date the solutions was prepared and the date of expiration.
- ✓ Open all hinged items and disassemble those with sliding or multiple parts (the solution must contact all surfaces in order to sterilization to be achieved).
- ✓ Completely submerge all items in the solution.
- ✓ Place any bowls and containers upright, not upside-down, and fill with the solution.
- ✓ Follow the manufacturer's instructions regarding the time necessary for sterilization to be achieved. In general, if the solution contains glutaraldehyde, cover the containers, and allow the items to soak for at least 10 hours.
- ✓ Do not add or remove any items once timing has begun.
- ✓ Remove the instruments and other items from the solution using large, sterile pickups (lifters, forceps).
- ✓ Rinse thoroughly with **sterile** water to remove toxic chemical residue. Note: boiled water is not sterile, since boiling does not guarantee that bacterial endospores have been killed.

**Steps for High Level Disinfection by Boiling**

- ✓ Decontaminate and clean all instruments and other items to be disinfected.
- ✓ Completely submerge all instruments in water. Open all hinged instruments or items with multiple parts.
- ✓ Cover pot and bring water to a rolling boil.
- ✓ After boiling starts, time for 20 minutes. Do not add additional items after timing begins.
- ✓ Ensure gentle, rolling boil is maintained.
- ✓ After 20 minutes, use forceps to remove items, place on high-level disinfected tray and allow to air-dry before storing or use.
- ✓ Use equipment immediately or keep covered in a dry, high-level disinfected container for not more than one week.

## **2.5 Waste Disposal Procedures**

### **Disposing of Liquid Waste**

Liquid waste should be disposed of as follows:

- ✓ Through a closed gutter system.
- ✓ The gutter should slant 2 – 4 % to keep the precipitate on gutter.
- ✓ The gutter elbow should be more than 90°C.
- ✓ The septic tank must be water proof, strong, have a man-hole and ventilation.
- ✓ Consider ground water level and the water source distance.

### **Solid Waste Disposal**

Solid medical waste should be disposed of following the guidelines below:

- ✓ Use washable, leak-proof containers. Plastic or galvanized metal containers are best because they are not likely to leak or corrode.
- ✓ Containers should have lids, preferably opened by step pedals.
- ✓ Waste containers should be in convenient places.
- ✓ Containers should be emptied daily or when  $\frac{3}{4}$  full.
- ✓ Never put hands into waste containers.
- ✓ Wash containers with a disinfectant and rinse them with water daily or more often if they are visibly contaminated.
- ✓ Always wear heavy utility gloves and shoes when handling and transporting medical waste.
- ✓ Wash both gloves and your hands afterwards.

## ANNEX 3: CHECKLISTS

### 3.1 Facility Review

#### *Facility Checklist*

Plan	Action	Yes	No
Is there a UP training and monitoring schedule?			
Is appropriate handwashing taught, supported & monitored?	Is there running water?		
	Is there soap?		
	Are there disposable or clean towels available?		
	Is there a functioning sink in treatment rooms?		
Is there an alternative plan if no water is available?	Is there a bucket, scoop/dipper, or alcohol and swabs for alcohol handrub?		
Is the appropriate use of barriers taught, supported & monitored?	Are there an appropriate supply of gloves?		
	Are gloves readily available in treatment and laboratory areas?		
	Are utility gloves available for housekeeping staff?		
Is there a system for disposing of equipment?	Is there an appropriate supply of chlorine solution?		
	Is someone assigned to put a basin of .5% chlorine solution in rooms where instruments are used?		
	Is someone assigned to prepare new mixture when needed?		
	Are there sharps containers accessible to staff who require them?		
	Is someone assigned to empty containers when $\frac{3}{4}$ full?		
Is there an appropriate system for processing instruments?	Is there someone assigned to take instruments from soaking basins to be cleaned?		
	Is there a special, protected designated for processing instruments?		
	Is there someone assigned to disassemble instruments and clean all surfaces?		
	Is there equipment for steaming, boiling or chemical sterilization?		
	Is someone assigned this task?		
	Is there a special place to store sterilized equipment?		
Is there an appropriate system for waste disposal?	Are there specially marked containers for general and medical waste?		
	Is there a protected area for storing waste?		
	Is there a method for burning or burying medical waste?		
Is there an appropriate housekeeping system?	Is there a cleaning schedule for housekeeping staff covering daily, weekly and monthly chores?		
	Are there adequate cleaning supplies, including brushes and detergent?		
	Are housekeeping staff trained in cleaning methods, including cleaning of cleaning utensils?		

### **3.2 UP Checklists**

Checklists can be used as staff learning guides and monitoring tools.

#### ***Routine Handwashing***

<b>TASK</b>	<b>YES</b>	<b>NO</b>
Did HCW wash hands at appropriate time, e.g. after arriving at health center, before seeing a patient?		
Was clean, running water used?		
Was soap used?		
Did the HCW rub hands together with soap and lather?		
Did the HCW weave fingers and thumbs together and slide back and forth for 10-15 minutes?		
Did the HCW rinse under running water?		
Did the HCW dry hands with a clean towel, disposal towel or air-dry?		
If running water is not available did staff member use bucket and scoop method or alcohol rub appropriately?		

#### ***Gloving for Health Care Workers***

<b>TASK</b>	<b>YES</b>	<b>NO</b>
Did the HCW wash hands before putting on gloves?		
Did the HCW put on disposable or examination gloves before touching blood or body parts?		
If interrupted, did the HCW take off gloves before touching any contaminated surfaces?		
If required, did the HCW put gloves on again?		
Did the HCW use a new pair of gloves for each new client?		

#### ***Removing gloves***

<b>TASK</b>	<b>YES</b>	<b>NO</b>
Is a basin with 0.5% solution for gloves only available?		
Did the HCW rinse gloved hands in the basin to remove blood and other body fluids?		
Did the HCW grasp one of the gloves near the cuff and pull it off partially?		
Did the HCW grasp the second glove near the cuff and pull it off partially?		
Were both gloves pulled off at the same time by only touching the inside surfaces of the gloves?		
Were gloves left in decontamination basin for 10 minutes before discarding or processing?		
Did the HCW wash hands after removing the gloves?		

***Disposal of Needles and Sharps***

<b>TASK</b>	<b>YES</b>	<b>NO</b>
After use, the HCW does not bend, break or cap the disposable needle?		
If HCW recaps needle, is the one hand technique used?		
Disposable syringes and needles are thrown away in a puncture-resistant container?		
Reusable syringes and needles are placed in a basin with 0.5% chlorine solution for 10 minutes?		
Puncture-resistant container is emptied when $\frac{3}{4}$ full?		

***Handling Sharps And Instruments***

<b>TASK</b>	<b>YES</b>	<b>NO</b>
Sharps are passed using the “hands free technique”?		
Each HCW has adequate visibility of the workspace during the procedures?		
Forceps are used during suturing to prevent injury?		
Sharps are thrown away in the puncture-resistant sharps container?		
Reusable instruments are placed immediately after use in a basin with 0.5% chlorine solution for 10 minutes?		

***Decontaminating Equipment***

<b>TASK</b>	<b>YES</b>	<b>NO</b>
A basin with 0.5% chlorine solution is available for decontamination?		
Assembled needles and syringes are filled with 0.5% chlorine solution and flushed several times (draw in and expel solution).		
Needle and syringe are soaked for 10 minutes in 0.5% chlorine solution.		
Needles and syringes are removed from solution using forceps or hands protected by utility glove		
Needles and syringes are flushed three times with clean water or cleaned immediately.		

***Cleaning Instruments***

<b>TASK</b>	<b>YES</b>	<b>NO</b>
Did staff member wear protective gloves?		
Was the item rinsed in cool water and disassembled if possible?		
Was the item submerged in basin with detergent and water prepared according to manufacturer’s instructions?		
Were brushes used to remove soiled matter, particularly in hinges or grooves?		
Was the item rinsed in clean water?		
Was the item dried by air or clean towels before further processing?		



***Sterilizing Instruments (Boiling)***

<b>TASK</b>	<b>YES</b>	<b>NO</b>
Were items decontaminated and cleaned first?		
Were items disassembled?		
Were air bubbles removed from needles and syringes?		
Were cleaned items placed in boiler and covered with clean water?		
Were items boiled for 20 minutes, counting from when boiling starts?		
Were items removed by sterile forceps immediately and placed in high level disinfected or sterile containers?		

***Sterilizing Instruments (Steam/Autoclave)***

<b>TASK</b>	<b>YES</b>	<b>NO</b>
Were items decontaminated, cleaned and dried first?		
Were items disassembled?		
Were needles and sharp edges wrapped in gauze?		
Were manufacturer's directions followed for autoclave or pressure cooker?		
Were instruments loosely wrapped in a double layer of muslin or newsprint to allow steam to penetrate; not tied or held together by rubber bands?		
Were instruments packed so that air could circulate and steam could penetrate all surfaces?		
Was steam regulated so that it came out of pressure valve only?		
Was steam monitored so instruments were not left to boil dry?		
Was the temperature at 121 <sup>0</sup> C (250 <sup>0</sup> F)?		
Was the pressure at 106kPA or 15 lbs/in <sup>2</sup> ?		
Were wrapped objects sterilized for 30 minutes and unwrapped items for 20 minutes?		
Were items stored in a HLD covered container or used immediately?		

***Waste Disposal (Facility Review)***

<b>TASK</b>	<b>YES</b>	<b>NO</b>
Are utility gloves available to those handling medical waste?		
Are utility gloves used by those handling medical waste?		
Is there a sharps container in each treatment room and in laundry area?		
Is there a separate waste container for medical and general waste, labeled accordingly?		
Is the container accessible to staff who generate waste?		
Is there someone assigned to empty sharps container when ¾ full?		
Is waste container covered?		
If waste must be stored: Is it protected from rodents, insects, and other animals? Is it minimally accessible to staff, clients and visitors?		
Is there a system for disposing of medical waste: burying, burning, pick-up by municipality?		

## **ANNEX 4:**

### **UNIVERSAL PRECAUTIONS GUIDELINES FOR DENTAL CLINICS**

#### **Dental Clinics**

- ✓ Wash hands with soap for 10-15 seconds then dry them with a clean or disposal towel or air dry.
- ✓ Wear sterile gloves, a mask, and eye protection.
- ✓ Disinfect molds and oral prints before sending to the laboratory or dental file.
- ✓ Remove gloves by the wrist so that any contamination is inside and keep them separate from other equipment. Gloved hands should not touch any contaminated surfaces. Remove gloves if you have to leave the room or touch other objects. Wash hands and re-glove when treatment continues.
- ✓ The staff responsible should clean the dental clinic after hours in the following manner:
  - Remove contaminated equipment from the room and thoroughly cleanse it of blood and debris.
  - Place used cotton swabs, pulled teeth, and other such waste into a special container before placing it into the medical waste bin.
  - Place sharp instruments and used needles into a puncture-proof container before putting them into the waste disposal bin.
  - Remove the cover tray and take it to the washing area along with contaminated instruments. Do not leave contaminated instruments in the open.
  - Before closing up the clinic, ensure that all equipment is sterilized and stored in clean drawers.

#### **Cleaning Dental Equipment**

Cleaning decontaminates the equipment and prolongs its working life. Bloodstains must be decontaminated before sterilization or disinfecting.

#### **Cleaning Items Used in the Dental Clinic**

<i>Item to be Cleaned</i>	<i>Procedure</i>
Instrument Table/Brackets	Clean with detergent and damp cloth then dry. Wipe with a 70% alcohol solution or other disinfectant
Waste Receptacle	Wash with detergent, dry and wipe with 70% alcohol solution or other disinfectant.
Cuspidor/Spittoon Bowl	Scrub with detergent and rinse with clean water containing a disinfectant
Water Cup Filler	Clean pipe by opening the tap completely. Clean spot where glass is placed with a small brush using filtered drinking water.
Saliva ejector and suction cannula	Immediately after use, clean by sucking pure water through then clean with antiseptic solution
Chair	Headrest, armrests, footrests and seat must be cleaned after every patient

### **Sterilizing Dental Equipment**

The following types of equipment can be sterilized:

- ✓ Metal-cast
- ✓ Glass
- ✓ Rubber
- ✓ Ebonite
- ✓ Spindle-textured

### **When sterilizing**

- ✓ Make sure that the sterilizer is functioning correctly.
- ✓ Decontaminate, clean, and dry items.
- ✓ Conspicuously label wrapped equipment with item name, date and time the sterilization was conducted.
- ✓ Position equipment properly.
- ✓ Carefully note the length of time needed for sterilization and monitor closely.
- ✓ Never put anything else inside the sterilizer before the sterilization period is up.
- ✓ After sterilizing, remove equipment to a sterile compartment using a sterile forceps.
- ✓ Do not remove wrapping before equipment has reached a safe temperature.

### **Special Equipment Requirements**

Conventional contra or straight angle, air turbine hand piece, triple or three-way syringe, ultrasonic scanner:

- ✓ Clean with wet cloth.
- ✓ Wipe with 70% alcohol.
- ✓ If necessary, sterilize in a 135-degree Celsius autoclave for 30 minutes. Check to see if the autoclave requires oiling first.

Micro motor and fiber optics:

- ✓ Wipe with a wet cloth and 70% alcohol (heat will damage the equipment).

Cotton compartment:

Wipe with 70% alcohol.  
If heatproof, sterilize it in an oven or autoclave.

Drills (steel or diamond), extirpation needles, lentil needles, reamer needles, filters:

Clean and dry.  
Put them in a petri dish cleansed with 70% alcohol solution.  
Put the petri dish containing the equipment into the oven or autoclave.

(Soaking the equipment in a mixed solution of 70% alcohol and formalin with a 3:1 ratio or in a 70% alcohol solution then running it through a flame will also sterilize it. The disadvantage of the latter method is that the flame can damage the equipment.)

Storage:

- ✓ Put general equipment in a dental cabinet.
- ✓ Put sterilized equipment, in a dressing sterilizing drum.
- ✓ Put drills and needles for neural treatment in the dressing sterilizing drums in the petri dish in which they were sterilized.
- ✓ Sterilize drums every two weeks.

Equipment can also be stored by wrapping it in sterile clothes.